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LOCAL PLANNING SCHEME NO. 3

**FORRESTFIELD/HIGH WYCOMBE
INDUSTRIAL AREA DESIGN GUIDELINES**

Reviewed February 2019

P-DEV 67 Local Planning Policy – Forrestfield / High Wycombe Industrial Area – Design Guidelines

Local Planning Policy and Management Procedure	Relevant Delegation Development Services
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Adopted	DD/MM/YYYY	Next Review Date	DD/MM/YYYY
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FORRESTFIELD/HIGH WYCOMBE INDUSTRIAL AREA DESIGN GUIDELINES

1.0. INTRODUCTION

1.1 Background

The Design Guidelines Area formerly known as Forrestfield/High Wycombe Industrial Area has been identified under the WA State Government's key strategic planning documents "Perth and Peel @ 3.5 million" and in the Economic and Employment Land Strategy: non-heavy industrial (2012).

Some of the land within the Design Guidelines Area has previously been the subject of rural residential-type development. The City acknowledges that the progressive development of the area for industrial land use activities may lead to some amenity implications for residents who wish to remain on their properties in the short-term. However, the City shall endeavour to minimise any potential problems through the development application assessment process.

It is apparent that industrial areas in many parts of the Perth metropolitan area have often reflected inadequate attention to building design, site layouts, appropriate land uses and site landscaping. This has resulted in industrial areas with rudimentary shed structures, often with offices, storage sheds and areas designed and arranged in a seemingly haphazard manner, with poor vehicle accessibility and parking arrangements, minimal landscaping, signage clutter, unsightly perimeter fencing and visually unattractive streetscapes. The City of Kalamunda is committed to ensuring this will not be the case in the new Forrestfield/High Wycombe Industrial Area.

Compliance with this Design Guidelines shall also ensure that new development is more efficient and sustainable in the use of energy, water and resources.

Irrespective of these Design Guidelines, all designs and building works shall at all times conform to all relevant Australian Standards and Building Codes.

1.2 Vision/Statement of Intent

The City of Kalamunda is firm in its resolve to oversee the development of a high standard, attractive, functional and sustainable industrial area, which will attract a range of businesses eager to locate within the area, offering ease of access to both customers and suppliers.

In addition to the usual industrial uses, the City will encourage land uses that take advantage of the lands strategic location in respect to major transport infrastructure, including Perth Airport, Roe Highway and Tonkin Highway. On this basis, logistics and other transport based industries are preferred land uses to take advantage of the lands locational attributes.

The Design Guidelines aim to complement the attractiveness of the industrial area's geographic and strategic location, and to encourage design features, construction quality and landscaping of a high standard which will ensure the Forrestfield/High

Wycombe Industrial Area is a sought-after location for business relocation, and a prestigious industrial address.

The City of Kalamunda will insist upon a high standard of presentation and quality for new development in order to maintain the value of existing and future business investment throughout the Design Guidelines Area.

These Design Guidelines contain development application submission requirements, and detailed requirements for landscape plans.

1.3 Design Guidelines Area

These Design Guidelines apply to all development of land zoned “Industrial Development” and “Special Use” located within the area generally bounded by Roe Highway, Berkshire Road, Milner Road, and Sultana Road West, as indicated in red in **Figure 1** below. The areas of zoned land are illustrated in **Figure 2** over the page.



FIGURE 1 – Design Guidelines Area

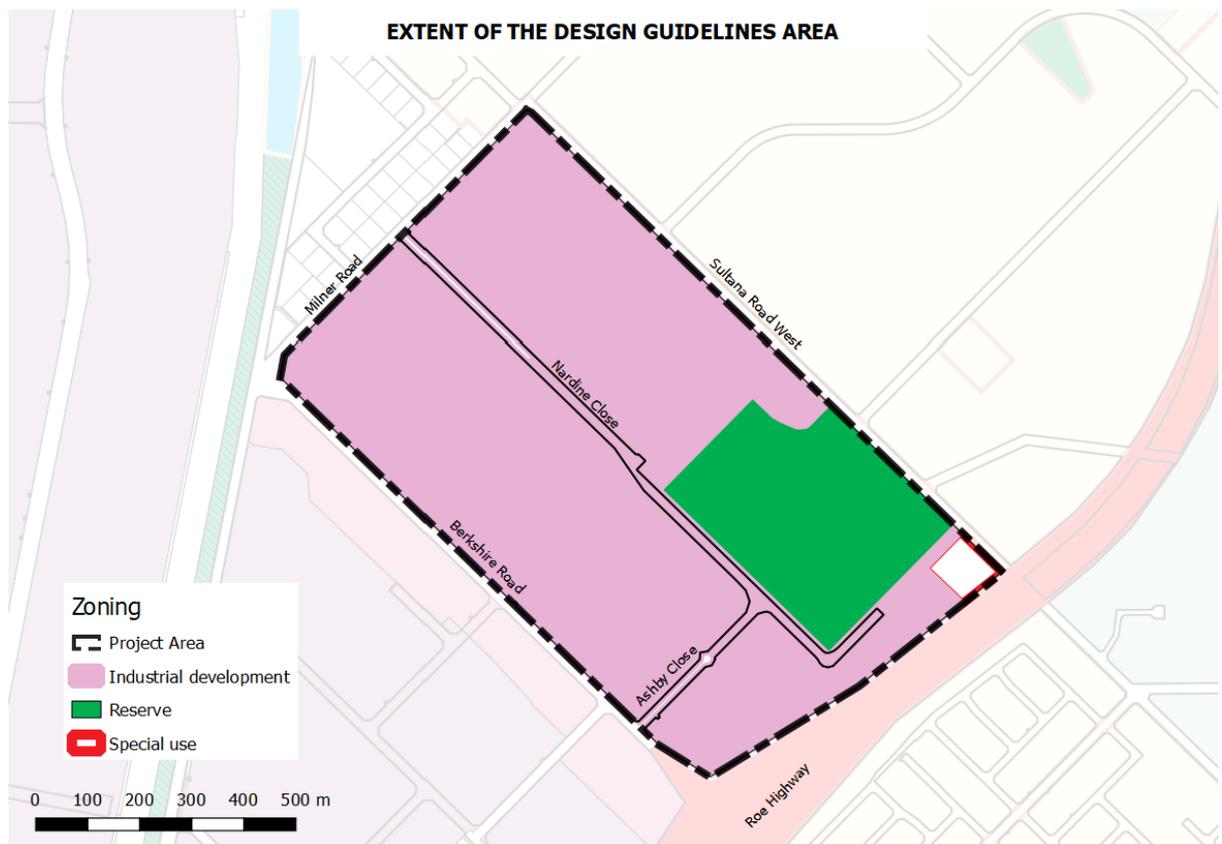


FIGURE 2 – Zoning Map

1.4 Design Guidelines Purpose

The Forrestfield/High Wycombe Industrial Area Design Guidelines provide clear and readily understandable criteria aimed at ensuring a consistently high standard of development is achieved throughout the Design Guidelines Area.

The Design Guidelines will also provide assistance to City of Kalamunda staff in assessing proposed developments.

The Design Guidelines contains principles, guidelines and some mandatory requirements relating to:

- Land use;
- Site development;
- Built form (including signage);
- Environmental management;
- Landscaping; and
- Site amenity.

1.5 Design Guidelines Objectives

- Facilitate a pleasant working environment, attractive streetscapes, and contribute to the protection of value in business investment within the area;

- To encourage attractive developments that are well designed, with functional and efficient buildings and site layouts;
- To encourage industries that are environmentally compatible with surrounding zones and activities;
- To encourage the development of high quality, attractive and sustainable landscaped areas and streetscapes;
- To encourage greater sustainability through energy and water-efficient building design and site development.
- To encourage water conservation through sustainable stormwater management, water-wise landscaping and water efficient reticulation in accordance with the Water Sensitive Urban Design principles.
- To minimise the impact of new industrial development on the environment and amenity of neighbouring residential properties;
- To minimise the impact of new industrial development on identified sensitive areas such as native bushland and waterways;
- To minimise unsightly and poorly planned and maintained developments;
- To encourage the value of existing and future business investment by insisting upon quality development throughout the Policy Area; and
- To encourage improved residential/light industrial interface for Lot 50 Sultana Road West.

1.6 Application of these Design Guidelines

The Design Guidelines act as a Local Planning Policy and has been prepared under and in accordance with Schedule 2 of the *Planning and Development (Local Planning Scheme) Regulations 2015* (the Regulations). The Design Guidelines document is adopted under clause 6.4 of Local Planning Scheme No. 3. It is to be used in conjunction with the City's Local Planning Scheme No. 3, and other relevant planning policies and guidelines.

It shall also be used in conjunction with the City's adopted environmental health and engineering regulations, policies and practices.

2.0. SITE DEVELOPMENT

3.1 Building Orientation

The primary building entrance and façade shall front onto the primary street.

Wherever possible, buildings should be orientated and designed to be energy-efficient, and to conserve non-renewable energy.

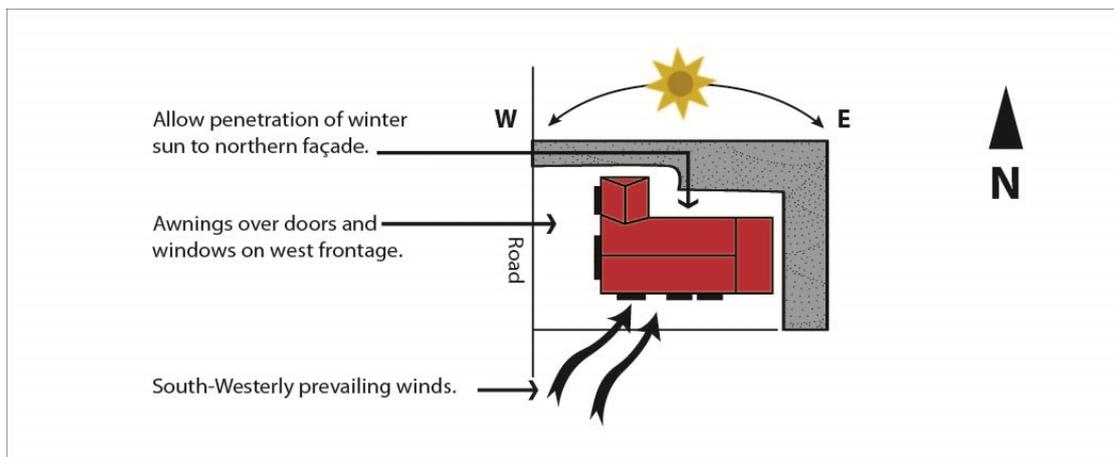


FIGURE 3 – Passive Solar Design Principles Applied to Building Orientation & Design

Passive solar design principles can include the following:

- Building orientation and wall openings should maximise exposure to the north and south;
- Building orientation and wall openings should maximise cross ventilation, especially cooling summer breezes from the south-west and south;
- The amount of walling and wall openings facing east and west should be minimised; or if this is not possible/practical, ensure adequate shading of the walls and wall openings; and
- Appropriate landscaping (trees, wall creepers, etc.) should be provided to create shade in summer, and to allow the penetration of winter sun.

3.2 Site Coverage

Site coverage requirements within the Forrestfield/High Wycombe Industrial Area are outlined in the City of Kalamunda Local Planning Scheme No. 3.

3.3 Plot Ratio

Plot ratio requirements within the Forrestfield/High Wycombe Industrial Area is outlined in the City of Kalamunda Local Planning Scheme No. 3.

3.4 Building Layout & Setbacks

The following minimum building setbacks shall apply to land within subject area “ on **Figure 1** and zoned “Industrial Development” and “Special Use”:

Zones	SETBACKS				SITE REQUIREMENTS		
	Front	Minor Street	Side	Rear	Site Coverage	Plot Ratio	Landscaping Strip (Road Frontage)
Industrial Development	20m ⁽¹⁾	10m ⁽²⁾	At the discretion of Council ⁽³⁾	At the discretion of Council ⁽³⁾	60 %	0.5	6m 8m along properties with frontage onto Sultana Road West

⁽¹⁾ Berkshire Road, Milner Road and Sultana Road West

⁽²⁾ All other roads (Nardine Close, Ashby Close and Bonser Road)

⁽³⁾ Proponents of new developments are encouraged to set back buildings a minimum of 3m from both the side and rear boundaries to assist with natural light penetration and natural cross-flow ventilation.

The land between the street alignment and the front of a building may only be used for access, the daily parking of vehicles or landscaping.

The setback area between the main building and any road must not be used for storage purposes, for loading or unloading vehicles, or for the parking of haulage or service vehicles, or for repairing and/or maintaining vehicles or items.

The primary entrance of the main office/administration should be visible from the street, and have a clear and safe pedestrian path leading to it from the visitors' parking area.

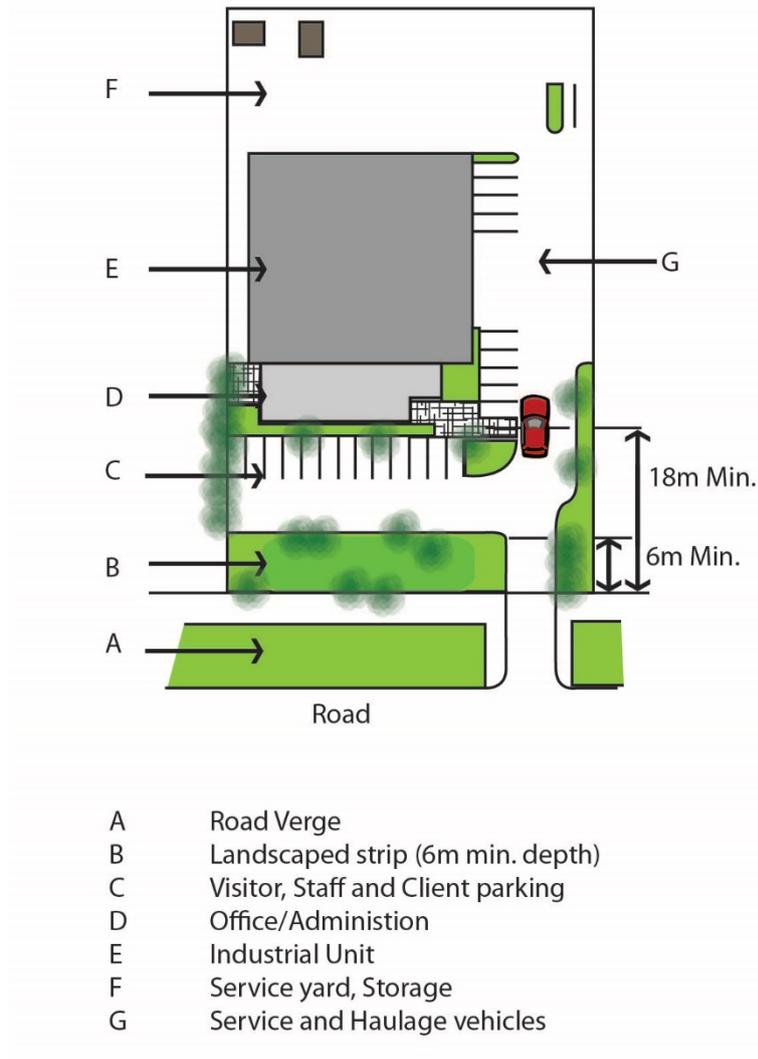


FIGURE 4 – Model Site layout

3.5 Vehicle Parking, Access & Circulation

Number of Car Parking Bays Required:

The provision of car parking bays for staff and visitors is outlined within Local Planning Scheme No. 3.

Vehicle Access:

- All vehicle access must be contained on site.
- All vehicles must be able to exit the site in a forward direction.
- The number of access points to a site shall be limited to 1 access point per 40m lot frontage. The Council may limit the number of access points where it considers a traffic hazard for road users. Access points should be designed to provide safe ingress/egress for vehicles and pedestrians.

- Vehicle access for Lot 50 Sultana Road West shall be permitted via Sultana Road West for residential purposes only, all other land uses shall be from Road 2a unless otherwise approved by Council.

Design of Vehicle Parking Areas and Accessways:

Accessways and parking areas must be planned and designed to achieve the following outcomes:

- Vehicle parking and circulation should be clearly marked and laid out and easily understandable by all users;
- Large expanses of parking are discouraged in favour of smaller modules broken up with vegetation and shade tree planting;
- Service and haulage vehicle parking areas are to be separated from visitor and staff parking areas, screened from the street, and located at the rear or sides of the buildings and behind the front building line;
- Within the service and haulage vehicle parking areas, large vehicle parking bays are to be located separate from small vehicle parking bays;
- Areas for loading bays, vehicle manoeuvring and outdoor storage are to be located separate from visitor and staff parking areas;
- External loading bays shall not be visible from primary street frontages, shall have access that is safe and convenient, shall be located at the side or rear of properties, and shall be screened from public streets by walls, landscaped earth mounds or dense planting;
- Clear paths are to be provided for pedestrian movement separate from areas of frequent vehicular movement;
- Parking areas for staff, clients and visitors are to be located adjacent to office/reception areas of buildings, with clear sight lines to entrances;
- Parking areas for staff, clients and visitors are to be provided with suitable species of canopy tree at a ratio of 1 tree per 4 car bays, spaced evenly throughout the parking area(s); [Further details provided in Section 6.0]
- Car parking areas are not to be used for temporary storage of goods, for servicing or for loading;
- Parking areas should be designed to channel rain water into areas set aside for planted vegetation;
- Parking for persons with disabilities is to be designed in accordance with the appropriate Australian and ACROD standards.
- Parking areas and access driveways must be paved or sealed with asphalt.



3.6 Pedestrians & Cyclists

In order to encourage staff members to travel to work by means other than the private car, new developments should provide end-of-trip facilities for pedestrians and cyclists. These could include secure bicycle storage, lockers and showers.

3.7 External Service & Storage Areas

- No open storage of goods, unserviceable vehicles or machinery shall be carried out within the front setback area (forward of the building line).
- All open storage areas shall be screened from the street and adjoining properties by landscaping, fencing and/or other means acceptable to the City of Kalamunda. Any screen fencing should use materials and colours that complement the main building design and, where possible, made to integrate with the building structure.
- Rubbish bin storage areas shall be screened from all road fronts. The dimensions and location of rubbish bin storage areas will be at the discretion of Council.
- All plant and equipment storage areas are to be adequately screened from public view from all road frontages.
- The preferred location for all external plant, service yards and bulk storage areas is at the rear of the lot.
- The storage of goods, materials, supplies or equipment is not permitted on road reserves, driveways, car parking areas, landscaped areas or public spaces.

3.8 Loading & Service Areas

- Loading bays and service dock areas shall be located at the rear or sides of buildings, and away from the main building entrance, or relatively visible areas.
- Where possible, service and loading areas should be enclosed within the building.
- Any external loading and service areas should be appropriately screened to minimise views from a public road and adjoining buildings.
- Loading areas should be designed to accommodate vehicular manoeuvring on site and should not prohibit on-site vehicular circulation or cause traffic queues.

3.9 External Lighting

- Lighting must be adequate to ensure a safe and secure environment.
- All external lighting shall be utilised in a manner which is consistent with the use for which it was designed (e.g., flood or spotlights, bollard lights, sensor lights, etc.)
- Beacons, search lights, blinking lights, flashing or changing intensity lights will not be permitted.
- Lighting should be directed away from adjacent buildings and any public roads.
- Security lighting should be confined to entrances and pedestrian areas and should not project onto any public road.
- All car parking areas, pedestrian routes and entrances shall be well lit. Parking area lighting should have a greater height than pedestrian area lighting, and be focussed downwards. Bollard lighting and pavement inset lighting is encouraged for pedestrian pathways.

3.10 Boundary Fencing

The intent of boundary fencing for individual premises within the Forrestfield/High Wycombe Industrial Area is to provide security for businesses without compromising the visual quality and overall character of the streetscapes.

- Fences and gates shall be integrated with site planning and the design of the building(s). Fencing shall generally be visually permeable and unobtrusive.
- Forward of the front setback line, the minimum fencing standard is an 1800mm high metal tubing framed vertical pale and horizontal rail fence with powdercoat finish. Black is the preferred colour, as it tends to “disappear” into its surrounds. The fence must be predominantly “open” in appearance.



Forward of the front setback line, the minimum fencing standard is an 1800mm high metal tubing framed vertical pale and horizontal rail fence with powdercoat finish. Black is the preferred colour, as it tends to “disappear” into its surrounds. The fence must be predominantly “open” in appearance.

- Behind the front setback line, the minimum standard for side and rear boundary fencing is black PVC galvanised link mesh fencing (barbed wire on top is permitted). Palisade and welded mesh fencing may also be acceptable. No link mesh fencing is permitted forward of the front setback line.
- All fences should be durable and resistant to weather conditions and vandalism.
- Sliding front gates are preferred. Where swinging gates are being installed on boundary fencing, these shall open inwards away from the street.
- Electrified fencing will only be permitted if considered suitable and necessary by the City of Kalamunda.
- The style, dimensions, materials and colours of all fencing shall be provided as an integral part of the Development Application.
- Any fencing forward of the street setback line at Lot 50 Sultana Road West shall be a maximum height of 1.8m above natural ground level and materials shall be consistent with P-DEV 57 Street Fencing and Walls Residential



Zoned Land requirements and Table 2 to the satisfaction of the City of Kalamunda.

3.0. BUILT FORM GUIDELINES

4.1 Building Design, Character & Detailing

Buildings should demonstrate excellence in design, detailing and construction, and incorporate best practice environmental sustainability.

A diversity of building designs will be encouraged. Buildings should have a modern industrial appearance, and the use of innovative, functional and attractive designs and building materials will generally be supported.

Buildings should be of a contemporary style, with office areas having a more “human” scale and located near the street frontage.

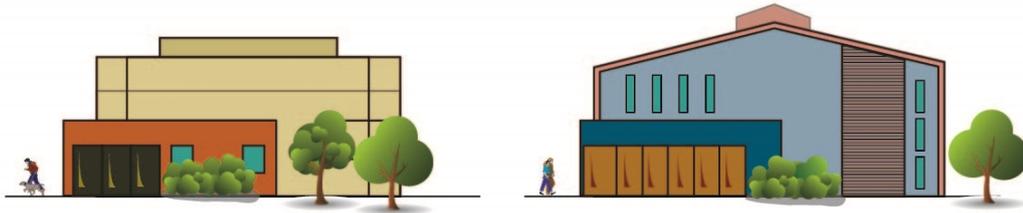


The office/administration building should be located near the street frontage, and be of a more “human” scale than its associated warehouse or factory unit.

Buildings must be designed to address the street, and significant emphasis must be placed on providing an attractive and interesting front elevation. The main entrance to the building must be clearly visible from the street, and be obvious to the arriving visitor. It should be at or near the front of the main building.

- The front elevation must display the corporate image, and have an inviting entrance, preferably with some weather protection such as an awning, canopy or verandah.
- A moderate to high level of articulation of building frontages is strongly encouraged. A high standard of architectural and building design is required.
- Building elevations on corner lots must address both street frontages. The side elevation should not be “forgotten” when the building is being designed and detailed.
- Rooftop structures such as plant and machinery should be located, as far as practical, in a position where it will be least visible from ground level.

- Monolithic buildings should be avoided. The mass of large buildings should be broken into groups of clusters or sub-parts where possible to reduce perceived scale.



- Large unrelieved expanses of blank wall or roof on one plane with uniform finishes must be avoided where they can be viewed from a street. This includes large expanses of mirrored glass.
- Where more than one building is planned for a site, they should be sited and designed to form an integrated “whole”, and present a visually harmonious image.
- Building design should be as flexible and innovative as possible to facilitate the changing needs of occupiers and their processes.
- Any buildings within 30m of the front boundary for Lot 50 Sultana Road West shall be commensurate with a residential scale. The maximum wall height in this area shall be 6m and the façade shall incorporate glazing and clearly definable entry points to the satisfaction of the City of Kalamunda.

4.2 Materials, Finishes & Colours

Sustainability

Building materials should be chosen which maximise durability, minimise maintenance, ensures good performance having due regard to the climate, maximises energy efficiency, promotes recycling, and maximises the use of renewable resources.

Design

New buildings should be designed with facades divided up into contrasting smaller areas or panels through the inclusion of different materials, the use of colour and various forms.

- A moderate to high level of articulation to provide visual interest and to “break up” building frontages is strongly encouraged. This can be achieved through one or more of the following treatments:
 - incorporating “in and out” walls;
 - including a high ratio of glass to solid wall;
 - using multiple façade materials (2-3 different appropriate materials on each street facade);
 - including bright colours on buildings as a “splash” feature or as a trim (i.e., as a limited special effect); and
 - using interesting roof shapes & roof angles (silhouettes).
- Different materials such as concrete panels, profiled metal sheet cladding and fibre cement cladding can be used for larger areas, with face brickwork,

stone panels and weatherboard panels as features, either separately or in combination.

- In addition, other feature elements can be used to achieve good, attractive design. For example, louvred vents and screens, projecting sun screens over windows, and exposed steel columns and bracings
- Consideration should also be given to dividing the façade(s) into top, middle and bottom sections using different materials and/or graded colours.
- Projecting sun screens over windows and overhanging roofs can also create interesting shadows on façades.

Building colours should generally be sympathetic and complementary with the natural environment (soils and vegetation), as well as the site landscaping. Generally, the use of dark colours should be reserved for the base of buildings, with lighter colours used for the upper levels.



Strong primary colours should be used sparingly to highlight building features or trim, and to add interest and relief to building façades.

Large areas of one material should be treated with muted colours and tones, avoiding strong hues.



Large areas of one material can be visually "broken up" and made to look more attractive and interesting by the judicious use of colour.

In this example, the visual impact of the large side wall with roller doors has been reduced by the use of two different but complementary colours.

Where a development is comprised of multiple buildings, or multiple tenancies within one building, the thoughtful use of complementary colours, materials, finishes and detailing can allow each business unit to be easily distinguishable and identifiable.

4.3 Plant & Equipment

All plant and equipment should be screened from public areas, or located at the rear of premises.

The exception to this may be where ductwork, stacks, tanks or flues that are necessary for the building to function are designed and treated as feature elements.

- Consider using plant and equipment as design features;
- Conceal unsightly plant such as air conditioning units;
- Use passive sustainable elements (such as water tanks and ventilation louvres) as design features and express these through the use of colour or by highlighting external structural elements.

4.4 Outbuildings & Other Structures

Where there are numerous separate buildings on the site, the design and location of each should be considered at the time of initial site planning. This will ensure that all buildings on the site will present as one integrated development.

This initial planning should extend to include possible future expansion of buildings, additional buildings and staging of development. The use of building forms, materials and colours should be complementary and consistent.

4.5 Signage

High quality, integrated signage is an important design element. Development proponents must provide an overall signage strategy, including proposed business advertising, information signage and directional signage, as an integral part of the development application process. An unnecessary proliferation of signs shall be avoided. The below provisions shall be read in conjunction with P-DEV 42 – Signage on Private Property.

Advertising Signs

Advertising signs attached to buildings shall be designed to be an integral part of the building – i.e., recessed into the façade, fascia or awnings, and co-ordinated in scale, colour and style. Signs can be incorporated as three-dimensional elements to add quality to the overall design effect.

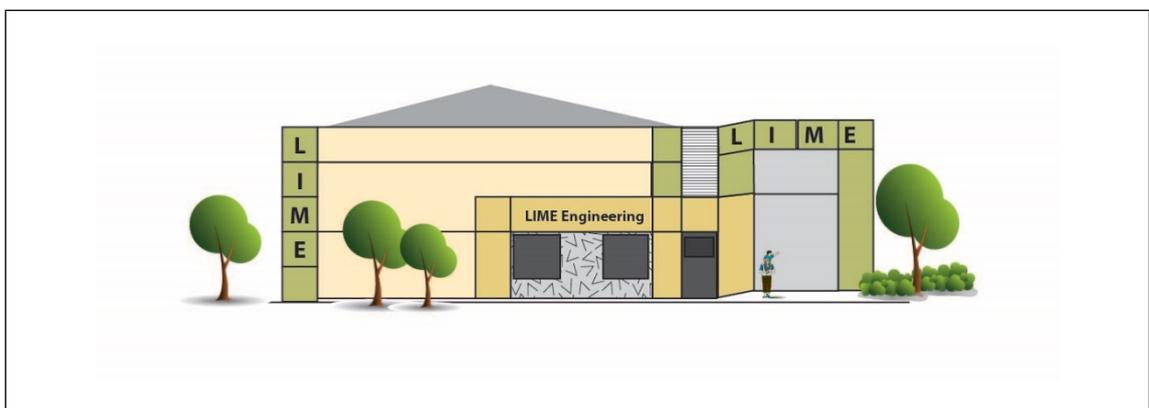


Figure 6 – Appropriate Locations for Corporate Signage

- All advertising signs shall be designed to be an integral part of the building fabric, and shall be of a standard equal to, and consistent with, the building design and detail;
- All signs located throughout the lot shall be of a consistent design character to maintain the amenity of the area;
- Only one free-standing identification sign or composite advertising sign is permitted per lot;
- Where multiple occupancy is proposed, the composite sign may have only one panel per occupancy; and
- Each premise will clearly display their street number.



Advertising signage information shall be limited to:

- The name, business logo, address, telephone number, email address and website associated with the premises;
- The name of the business or businesses contained within the premises; and
- The type of services, activities or products available within the premises.

Some signs and sign types will not be permitted. These are:

- Roof-mounted signs or signs which project above the ridge height of the building;
- Moving, flashing, pulsating, intermittent or sound-emitting signs;
- Changeable message signs;
- Sequined or glittering signs;
- Unrelated or “third party” signs;
- Signs attached to fences;
- Billboards;
- Any portable advertising sign located on the road reserve;
- Tower and monolith signs; and
- The excessive application of modern standardised corporate advertising.

Directional and Information Signs

Directional signage should assist visitors to the site, and include entry and exit signs, parking controls, and signs clearly indicating delivery and reception areas.

Directional signage should ideally be part of an overall signage “family” of complementary fonts, colours and other related imagery.

4.0. ENVIRONMENTAL MANAGEMENT

Among other things, the City of Kalamunda will be encouraging site and building design based on environmentally sustainable principles including correct solar aspect, appropriate materials and finishes, natural ventilation, water conservation and reuse, embodied energy and energy efficient operations, and the “greening” of sites and streetscapes.

5.1 Landscaping

Intent:

The City of Kalamunda is determined to oversee the development of the Forrestfield/High Wycombe Industrial Area as a high quality, attractive, sustainable and functional “estate”. An integral part of this “vision” will be the development of a high standard of landscaping – principally tree and shrub planting, as well as the protection of existing high quality natural vegetation.

Considering the large scale of most industrial buildings, larger-scale trees should form a significant proportion of plantings. These can be complemented by mass plantings of water-wise low shrubs, herbs, ground covers and strappy leaf plants between the trees. The use of plants which have colourful flowers and leaves is particularly encouraged.

Car parking areas must be well planted with shade trees at a ratio of 1 tree for every 4 bays to visually reduce the apparent size of the hard paving, to reduce the amount of radiated heat and the “heat island” effect which can occur during summer, and to provide welcome shade for parked cars.



The City has responsibility for the development and ongoing maintenance of landscaping in public areas: i.e., road reserves, parks and nature reserves, however Developer Contributions cover for the first two years from the point of development.

The City will undertake the landscaping of these public areas in partnership with private land owners, who will be responsible for the landscaping of their own properties. The establishment and ongoing maintenance of landscaped areas on private land will be an integral part of the site planning and development approval process.

Landscape Purpose:

Private landholdings will be landscaped in a manner which achieves the following objectives:

- to provide an attractive setting, “front yard” and entry for developments;
- to provide attractive streetscapes which complement street tree planting and other landscape measures undertaken by the City within the road reserves;
- to screen unsightly on-site activities or areas;
- to provide shade over paved areas, especially car parking areas;

- to provide plants that are hardy and drought-tolerant, which provide habitat and food for local fauna, and require minimal herbicides and pesticides; and
- to provide a high level of amenity for workers and visitors by providing summer shade, winter sun, and wind breaks.

Landscape Requirements:

- With the exception of all lots abutting the south side of Sultana Road West east of Milner Road, where an 8m landscaping Buffer is required, the first 6m (minimum) of each street frontage of every lot within the Industrial Development Zone shall be set aside, developed and maintained as landscaped (planted) space. The landscaping of this space shall contribute positively to the character of the streetscape.
- Landscaping behind fences should not form a dense screen, except where it is required to screen outdoor storage areas or plant and equipment.
- Perimeter fences may be placed behind landscaping strips, however the landscaping outside the lot boundary should generally require only low maintenance (street trees, mulch) and should not easily trap wind-blown refuse.



- Wheel stops at the front ends of car parking bays must be used to prevent cars damaging trees.
- All landscape designs should be practical and easily maintained.
- All applications for Approval to Commence Development by the City of Kalamunda to include a detailed landscape plan as documented in **Appendix 2** of this Design Guidelines.

- Narrow landscaped strips (i.e., less than 2m in width excluding kerbs and other barriers) are ineffective and should be avoided.
- Plantings should generally allow views into and across industrial sites rather than seeking to screen them entirely from view. However, landscaping shall be used, perhaps in conjunction with screen fencing, to hide outdoor storage areas.
- Indigenous and “water-wise” plant species are strongly preferred. Large areas of grass should be avoided.
- Significant tree planting should be a feature of every landscape plan. Trees shall be planted within the landscape strip of every street frontage at the minimum rate of one tree for every 6 metres of total lot frontage. These should preferably be planted at staggered intervals in two rows.
- The use of mature/advanced plants to create an immediate visual impact and to enhance the amenity of the area is preferred.
- The landscape design for each site shall be undertaken by a qualified landscape professional. All landscaping and planting shall be undertaken by a qualified contractor.
- Proponents of new developments must make every endeavour to retain any existing large, healthy, mature trees on site, and accommodate their retention and ongoing protection in any site and landscape plan if possible and practical.



Landscape Requirements for Lots Zoned Industrial Development Abutting the South Side of Sultana Road West and Located East of Milner Road:

These lots are planned to be developed for industrial purposes as part of Stage 1, and well before lots on the north side of Sultana Road West in Stage 3 are developed. The lots on the north side of Sultana Road West are currently being used for rural residential-type development. For this reason, an additional level of visual protection from new industrial development for existing residents is warranted.

Therefore, for lots abutting the south side of Sultana Road West and located east of Milner Road, the first 8m (minimum) of the Sultana Road West frontage of every lot shall be set aside, developed and maintained as landscaped (planted) space. The landscaping of this space shall act as a landscaped buffer and provide adequate visual screening from the road of the buildings and activities on the lot, and contribute positively to the character of the streetscape.

Apart from this requirement, all other landscaping requirements listed in the previous section shall apply to lots zoned Industrial Development abutting the south side of Sultana Road West and located east of Milner Road.

5.2 Landscape Reticulation

To ensure plantings are successful, landscaped areas shall be irrigated with an appropriate reticulated watering system. Land owners should:

- Install a low flow trickle irrigation system;
- Install a programmable water controller/timer system; and
- Direct rainwater runoff from buildings and hardstand areas to the landscaped areas.

Irrigation should take place at night or early morning to reduce evaporation losses.

It is also recommended that land owners install external rainwater tanks to irrigate planted areas (and/or provide water for internal domestic use such as toilet flushing).

5.3 Rainwater/Stormwater Disposal & Harvesting

Pervious surfaces should be used wherever possible.

All impervious surfaces must be adequately served with appropriate stormwater inlets and on-site pervious drainage swales to ensure all stormwater is handled within the site boundary or treated appropriately prior to legal discharge.

Stormwater is not to be discharged to adjoining properties.

Parking areas should be designed to channel some stormwater into areas set aside for planted vegetation. Water-sensitive urban design measures should be incorporated into site design, including:

- Using grassed swales instead of conventional kerbing and channel drainage;
- Using filter strips such as a maintained grass or vegetated strip; and
- Using stormwater infiltration measures at the end of swales or open drains.

Stormwater runoff from roofs should be sent to rainwater tanks that are plumbed in to irrigate landscaped areas, or for showering and toilet flushing.

Surface grading of all sites must be designed to eliminate ponding or back-up of water.

5.4 Waste Management

Waste storage and disposal facilities should be integrated with the site and building design.

Waste and refuse should be stored in a purpose-built facility, and screened from any adjacent street and staff amenity/recreation areas. Where possible these areas should be contained within the building. Wind-proof cages should be used to prevent scattering of waste.

All inadvertent discharge from equipment and vehicle cleaning, servicing etc., (not captured by the wastewater system) must be cleaned and filtered prior to entry into the stormwater system.

Recycling storage facilities should be provided

5.5 Natural Light & Ventilation

To complement the solar passive site layout and building orientation guidelines described in Section 4.0, the following building design initiatives are aimed at conserving non-renewable energy, and improving employee comfort by assisting the penetration into buildings of natural light and ventilation.

Natural Light:

Roof lights have the ability to introduce UV filtered sunlight into the centre of a building. Translucent roof light material is recommended.

Clerestory windows can introduce natural light (preferably diffused southern light) into the centre of a building, thereby reducing the need for artificial lighting.

Ventilation:

Side wall ventilation openings can be used to encourage cross-ventilation through a building. Clerestory windows provide an outlet for rising warm air within a building, and also allow cross-ventilation.

Small wind-powered ventilation turbines located on a roof increase a building's air circulation by aiding the extraction of hot air from a building, which then allows cooler air to enter at a lower level. Large roof vents can also assist this process.

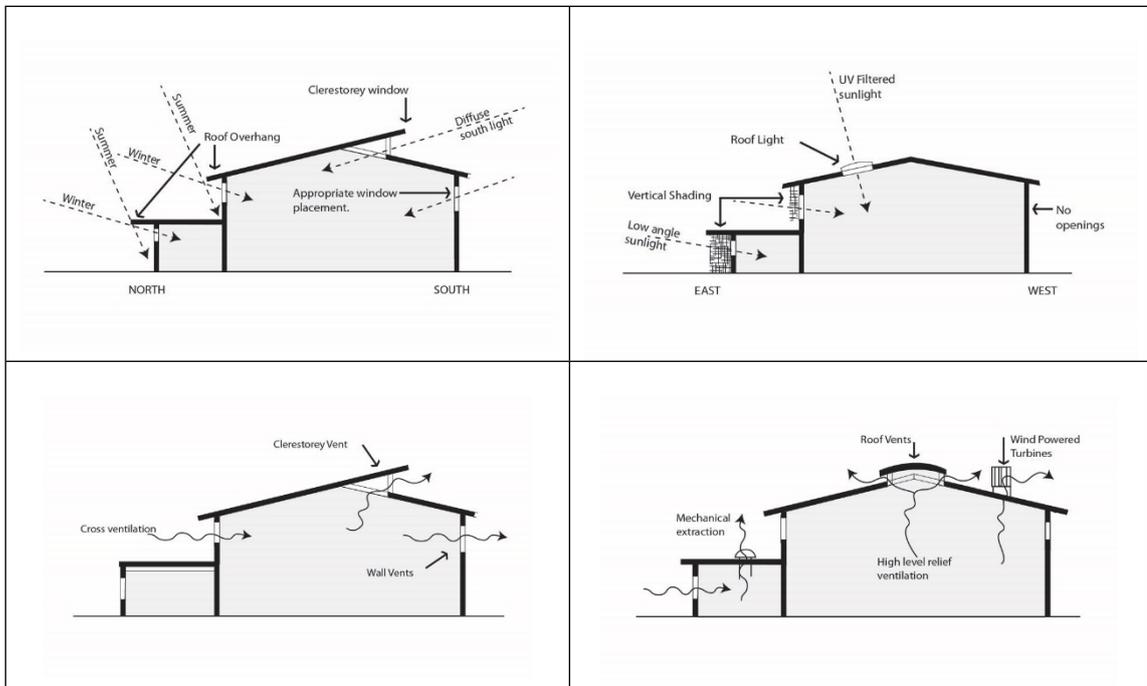


FIGURE 7 – Provision of Cross Ventilation & Natural Lighting

5.6 External Lighting of Buildings & Spaces

- No glare or light spill from a property should adversely affect adjoining properties or passing motorists. Baffled or directional lighting should be used to minimise this eventuality.
- Energy-efficient lighting systems are recommended for external areas.
- Lights controlled by timer controls or motion sensors are also recommended to save energy.

5.7 Internal Lighting of Buildings

It is recommended that:

- energy efficient light fittings be used; and
- lights controlled by timers, photosensitive cells or motion sensors be used where possible and appropriate.

5.8 Water Use & Storage

The following recommendations are consistent with the Building Code of Australia 5 Star Plus energy and water efficiency measures:

- install solar or 5 star gas (or heat pump) hot water systems;
- install water efficient showerheads;
- install water efficient tap fittings in all kitchen sinks and bathroom basins; and
- fit water efficient dual flush toilets, and/or waterless urinals.

It is also recommended that land owners install external rainwater tanks to irrigate planted areas (and/or provide water for internal domestic use such as toilet flushing). The recycling of grey water will be encouraged.

5.0. SITE AMENITY

6.1 Landscape Maintenance

Conditions of consent or planning approval will require ongoing maintenance of the following items:

- All accidental damage or vandalism should be repaired promptly.
- Preventative maintenance should be undertaken as part of a regularly scheduled process to maintain the appearance, efficiency and safety of the

site. A site maintenance manual and schedule should be prepared, updated and used on a recurring basis.

- All dead plants, branches, weeds and leaf litter should be removed on a regular basis. All dead plants should be replaced promptly (subject to prevailing weather conditions).
- Irrigation systems should be checked regularly for leaks and damage.

6.2 Building Maintenance

All buildings, car parks, signage and paved areas are to be maintained to a high level of presentation.

- All painted surfaces are to be kept in good repair with regular scheduled repainting as required.
- Preventative maintenance should be undertaken as part of a regularly scheduled process. A building maintenance manual and schedule should be prepared, updated and used on a recurring basis.
- Safety and health must be protected at all times. All accidental damage or vandalism should be repaired promptly.

6.3 CPTED & Safer Design

Site layout and design should conform to the principles of “Safer Design”, or “Crime Prevention through Environmental Design” (CPTED) principles. These include the provision of:

- clear sightlines;
- pedestrian safety, good connections and access;
- active and passive surveillance of the public realm from private property;
- “neck to knee” clearance zones in landscaped car parks for better surveillance;
- “open” planting adjacent to public thoroughfares;
- good lighting of car parks and pedestrian routes;
- visually permeable fencing along open space edges to sites;
- clear direction signage;
- vandal-proof fittings on furniture, lights and other items; and
- robust materials.

*

APPENDIX 1 – Development Application Requirements

1	Completed Schedule 6 Form signed by the property owner.
2	Prerequisite planning fee.
3	Copy of Certificate of Title.
4	Detailed written statement in support of proposal, including but not limited to: <ul style="list-style-type: none"> ▪ Type of use/development. ▪ Hours of normal and peak operation, and number of employees. ▪ Compliance with the Town Planning Scheme, these Design Guidelines, and any other applicable Detailed Area Plans, Structure Plans, Outline Development Plans and other applicable City of Kalamunda policies. ▪ Justification for any proposed variations. ▪ Distance of all structures from nearest boundaries. ▪ Existing and proposed building envelope (if applicable)
5	Site plan (4 copies) of a scale of no less than 1:500 showing: <ul style="list-style-type: none"> ▪ Lot number(s), land area, boundaries, dimensions of the site and a north point (preferably to the top of the page). ▪ Location of existing buildings and landscaping to be retained. ▪ Existing ground features including watercourses. ▪ Location of proposed buildings and landscaping. ▪ Details of effluent disposal systems. ▪ Gully and manhole locations, pipe sizes, subsoil drainage requirements, falls to paved areas, falls to landscaped areas, proposed connection of City system and soak wells. ▪ Existing and proposed contours and floor levels, embankments and retaining walls. ▪ Location and type of any easements. ▪ Details of roads, accessways, crossovers, visitor and staff car parking, commercial vehicle parking and manoeuvring, location of loading/unloading areas, fencing location and type, and any proposed verge treatments. ▪ Details of any open space and staff amenity areas. ▪ Schedule of materials, colours and finishes. ▪ Location and details of any cut and fill, and method of retaining. ▪ Location and type of bin storage areas and recycling facilities. ▪ Statement regarding all energy efficiency measures proposed, and how it is planned to minimise water use.
6	Floor plans (4 copies) of a scale of no less than 1:500 showing: <ul style="list-style-type: none"> ▪ Internal dimensions. ▪ The uses to take place in each part of the building(s) ▪ Public & staff facilities clearly marked. ▪ All entrances and fire exits.
7	Elevations (4 copies) of a scale of no less than 1:500 showing external dimensions, fixtures & lighting details.
8	Coloured streetscape elevation(s) (4 copies) for all developments exceeding \$1M.
9	Signage strategy. (Advertising, information and directional)
10	Landscape plan. (See Appendix 1)
11	Landscape reticulation plan. (See Appendix 1)

*

APPENDIX 2 – Landscape Plan & Reticulation Plan Requirements

Landscaping has the potential to improve the visual amenity and environmental sustainability of all urban areas, including light industrial areas. Landscaping should not only complement the appearance of a proposed development but also that of surrounding land uses. Consequently the City of Kalamunda requires that detailed landscape and reticulation plans accompany all new industrial development applications.

Landscape Plans

A landscape plan must include the following information:

- A site plan with a scale of not less than 1:200 illustrating all the areas proposed to be landscaped.
- A legend of plants showing botanical names of the proposed vegetation types.
- Quantity of plants, their spacing, and landscape vegetation.
- Pot sizes of plants at the time of planting.
- Identification of existing vegetation types, their botanical names and their intended use.
- Details of ground treatment such as paving, grass, etc.
- Details indicating how water harvesting of impervious surfaces will be undertaken and used to irrigate landscaped beds.
- Approximate location of neighbouring buildings to fence lines.
- Location of any existing, and proposed, fences.

Landscaping is required to be installed in accordance with an approved landscape plan.

Landscaping on Council Verges

- All landscape plans must clearly show any proposed treatments or landscaping proposed to take place within the Council verge: e.g., grass and paving.
- Any existing trees located on the Council verge must be shown.
- No street trees shall be removed unless written approval is obtained from the Manager Parks.

Shade Tree Requirements for Car Parking Areas

The City requires proponents to plant a minimum of one shade tree for every 6 car bays provided on the lot, to Council's satisfaction.

Reticulation Plans

A reticulation plan will accompany the landscape plan. It shall detail:

- Scheme and bore water requirements.
- The approved bore licence from the Department of Environment and Conservation.
- Any other proposed sources of water (e.g., rainwater tanks).
- Locations of compensating basins and sumps.
- Methods of reticulation (such as trickle or fixed systems).
- Indicate the method of operation (automatic/manual).
- The watering schedule.

Planning of Indigenous Species

Indigenous and “water-wise” plant species are strongly preferred. Indigenous plants are adapted to the local climate, and provide habitat and food for local fauna. Large areas of grass or lawn should be avoided.

The City encourages all proponents of new developments to use indigenous vegetation species when preparing landscape plans.

Please contact the City’s Planning Services for enquiries.

*



Structure Plan Notes

Subdivision, strata titling and design requirements

General

1. Notation A denotes Berkshire Road / Milner Road / Dundas Road full movement intersection.

Lot Size

2. Industrial subdivision is to meet the requirements of the Scheme and WAPC Policy DC4.1 - Industrial Subdivision unless otherwise specified.

3. Notation B denotes a 3,000m² minimum lot size for Lot 50 Sultana Road West

4. Remaining lots, minimum size of approximately one (1) hectare applies.

Battleaxe Development

5. Notation C denotes that no battleaxe subdivision will be supported (unless otherwise depicted on the Structure Plan Map).

6. Notation D denotes that single or shared battleaxe legs are not permitted to service industrial development on existing Lots 50, 51 and 52 Sultana Road West and Lots 5, 6 and 8 Ashby Close. Approval to non-residential development is contingent on securing direct access to a constructed public road.

7. Subdivision will be permitted on Lot 50 Sultana Road West subject to the construction of Road 2A.

Industrial Strata Titling

8. Industrial unit strata titling will only be supported in circumstances where a management statement is imposed as a condition of strata approval to the satisfaction of the Shire that ensures appropriate management arrangements and ongoing compliance with all development criteria as contained with the Scheme, this Structure Plan, any supporting planning policy or design guidelines, or any other requirements specified by the Shire.

Development Criteria and Requirements

Land Use Permissibility

9. Although the permissibility of uses is as set out in Table 1 in the Scheme, the Structure Plan intent is to facilitate land uses that take advantage of the lands strategic location in respect to major transport infrastructure, including Perth Airport, Roe Highway and Tonkin Highway. On this basis, logistics and other transport based industries are preferred land uses to take advantage of the lands locational attributes.

10. When considering development applications for 'D' and 'A' uses under the Scheme, consideration will be given to the extent that the proposed use supports the Structure Plan intent in accordance with (a) above.

Built Form

11. In addition to the requirements of the Scheme, any applicable planning policy and design guidelines, any wall or building facing any street is to be painted or otherwise treated to ensure an appropriate standard of visual amenity to the satisfaction of the Shire.

12. In addition to the requirements of the Scheme, any applicable planning policy and design guidelines, service areas, bin and storage areas and services such as air conditioners and other machinery are to be screened such that they are not visible from the street.

Vehicle Access and Movement

13. No vehicular access for non-residential development will be permitted via existing battleaxe legs.

14. All vehicular access for all non-residential development is to be taken directly from a gazetted and constructed public road.

15. In addition to the requirements of the Scheme, any applicable planning policy and design guidelines, internal driveways and car parks are to be designed to ensure slow speeds. Lengths of driveway or car parks exceeding 50 metres are to incorporate speed control devices including minor level changes.

16. Vehicle access at the intersection of Ashby Close and Berkshire Road will be restricted to left in, left out only.

Pedestrian Movement and Amenity

17. In addition to the requirements of the Scheme, any applicable planning policy and design guidelines, footpaths are to be provided connecting car parking areas to buildings to the satisfaction of the Shire.

Landscaping

18. In addition to the requirements of the Scheme, any applicable planning policy and design guidelines, landscaping is to be provided within any development site of a sufficient quality to ensure an attractive well-landscaped environment.

19. Landscaping within car parks throughout the Structure Plan area is to be in accordance with the requirements of the Scheme, any applicable planning policy and design guidelines.

20. In addition to the requirements of the Scheme, any applicable planning policy and design guidelines, the tree species implemented, when not used for screening purposes, shall be of a type having high branch free stems to facilitate surveillance and visibility of building fronts and with a large canopy to achieve adequate shading of car parking areas.

Signage

21. In addition to the requirements of the Scheme, any applicable planning policy and design guidelines, signage is to relate directly to the building containing the use or service and any associated products for advertising purposes, and is not to be excessive or unnecessary. Third party signage is not permitted.

Energy Efficiency

22. In addition to the requirements of the Scheme, any applicable planning policy and design guidelines, building openings should be orientated to benefit from passive climatic heating and cooling opportunities to reduce fixed energy consumption.

23. In addition to the requirements of the Scheme, any applicable planning policy and design guidelines, all new buildings should incorporate energy saving design and technology where practical to do so.

Design Guidelines

24. For additional development criteria and requirements applicable in the Structure Plan area, refer to the Forresterfield/High Wycombe Industrial Area Design Guidelines.

LEGEND			
	Structure Plan Boundary		Existing Road
	Metropolitan Region Scheme Reserve - Parks and Recreation		New Road
	Local Planning Scheme No. 3 - Industrial Development Zone		Potential New Road
	Local Planning Scheme No. 3 - Special Use Zone - Composite		New road connection/intersection
	City of Kalamunda		Emergency Access
	Roe Highway		10 metre Setback Line (minor street)
	Pedestrian Path		8 metre Landscaped Buffer to Sultana West Road
	Shared Path		6 metre Landscaping Strip
	20 metre setback line (main street)		Bush Forever Interface Treatment
	Potential Road subject to Subdivision of Lot 50 Sultana Road West		

This concept has been prepared for the purpose of meeting client specifications. The drawing does not constitute an invitation, agreement or contract (or any part thereof) of any kind whatsoever.

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Liability is expressly disclaimed by The Planning Group WA Pty Ltd for any loss or damage which may be sustained by any person acting on any visual impression gained from this drawing.

Forresterfield/ High Wycombe Industrial Area
Stage 1 - Local Structure Plan Map
Shire of Kalamunda

Date: 20 January 2017
Scale: 1:5000 @ A3
Drawing No. 710-135 ST1H 2017-01-20.dwg

Designer: MC
Drawn: PR



LOCAL PLANNING SCHEME NO. 3

**FORRESTFIELD/HIGH WYCOMBE
INDUSTRIAL AREA DESIGN GUIDELINES**

August 2012

This Document has effect from 27 August 2012

LOCAL PLANNING SCHEME NO. 3

FORRESTFIELD/HIGH WYCOMBE INDUSTRIAL AREA DESIGN GUIDELINES

Contents

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APPENDIX 1 – Development Application Requirements

APPENDIX 2 – Landscape Plan & Reticulation Plan Requirements

FORRESTFIELD/HIGH WYCOMBE INDUSTRIAL AREA DESIGN GUIDELINES

1.0 INTRODUCTION

1.1 Background

The Design Guidelines Area has been identified under the WA State Government's key strategic planning documents "Directions 2031 and Beyond" and in the Economic and Employment Land Strategy: non-heavy industrial (2012).

Some of the land within the Design Guidelines Area has previously been the subject of rural residential-type development. The Shire acknowledges that the progressive development of the area for industrial land use activities may lead to some amenity implications for residents who wish to remain on their properties in the short-term. However, the Shire shall endeavour to minimise any potential problems through the development application assessment process.

It is apparent that industrial areas in many parts of the Perth metropolitan area have often reflected inadequate attention to building design, site layouts, appropriate land uses and site landscaping. This has resulted in industrial areas with rudimentary shed structures, often with offices, storage sheds and areas designed and arranged in a seemingly haphazard manner, with poor vehicle accessibility and parking arrangements, minimal landscaping, signage clutter, unsightly perimeter fencing and visually unattractive streetscapes. The Shire of Kalamunda is committed to ensuring this will not be the case in the new Forrestfield/High Wycombe Industrial Area.

Compliance with this Design Guidelines shall also ensure that new development is more efficient and sustainable in the use of energy, water and resources.

Irrespective of these Design Guidelines, all designs and building works shall at all times conform to all relevant Australian Standards and Building Codes.

1.2 Vision/Statement of Intent

The Shire of Kalamunda is firm in its resolve to oversee the development of a high standard, attractive, functional and sustainable industrial area, which will attract a range of businesses eager to locate within the area, offering ease of access to both customers and suppliers.

In addition to the usual industrial uses, the Shire will encourage the establishment of complementary and progressive industries such as research and development facilities particularly in regard to Stage 3 of the Industrial area.

The Design Guidelines aim to complement the attractiveness of the industrial area's geographic and strategic location, and to encourage design features, construction quality and landscaping of a high standard which will ensure the Forrestfield/High Wycombe Industrial Area is a sought-after location for business relocation, and a prestigious industrial address.

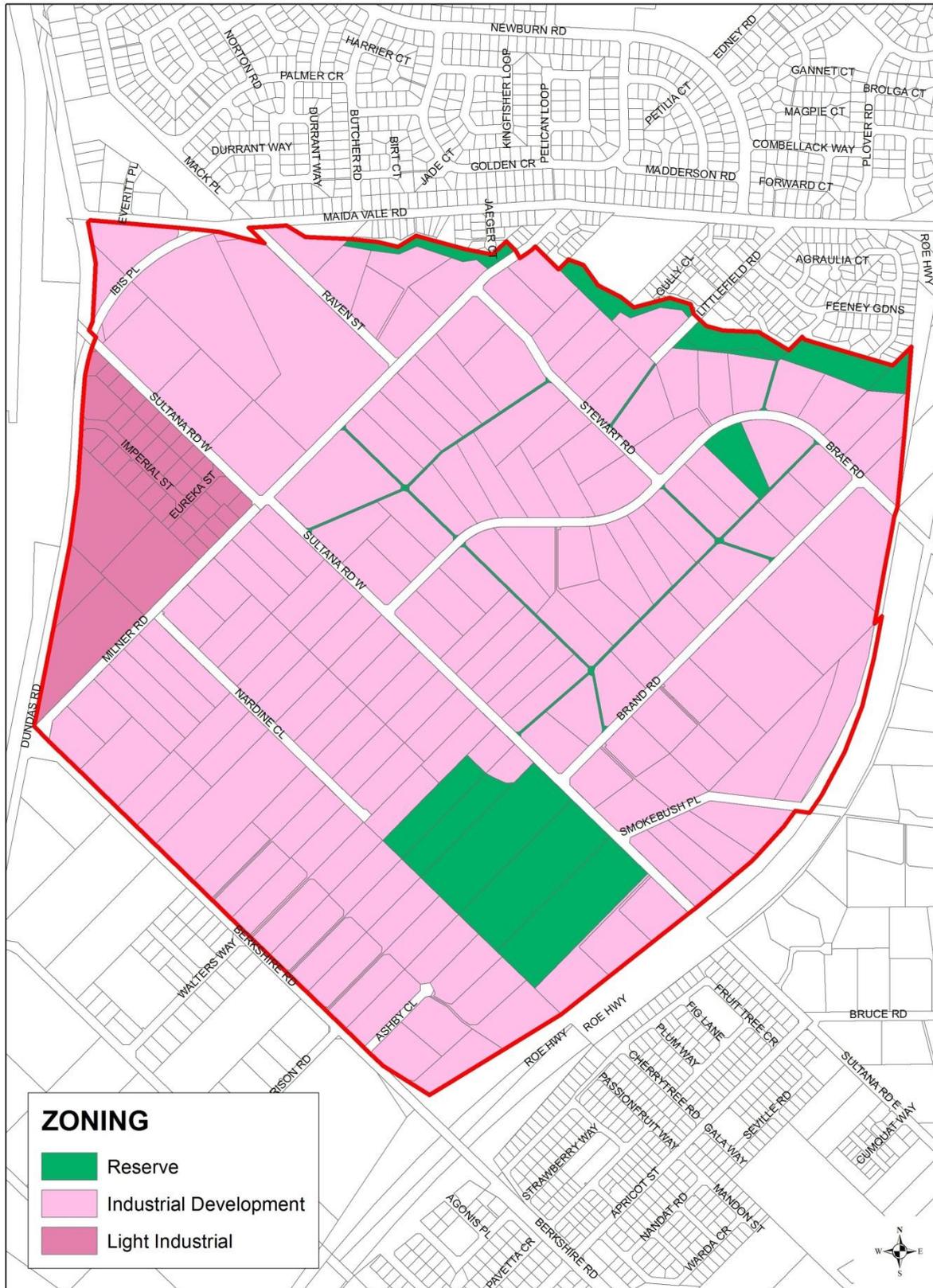
The Shire of Kalamunda will insist upon a high standard of presentation and quality for new development in order to maintain the value of existing and future business investment throughout the Design Guidelines Area.

1.3 Design Guidelines Area

This Design Guidelines apply to all development of land zoned “Light Industry” and “Industrial Development” located within the area generally bounded by Dundas Road, Maida Vale Road, Poison Gully, Roe Highway and Berkshire Road, and defined more accurately by the area bordered in red and shown in **Figure 1** below. The areas of zoned land are illustrated in **Figure 2** over the page.



FIGURE 1 – Design Guidelines Area
 (NOTE: The Stages identified on the map in Figure 1 above refer to the proposed order of development of those areas as described in the adopted Indicative Development Plan – see **Figure 3.**)



Extent of the Design Guidelines Area

200 100 0 200 Metres



FIGURE 2 – Zoning Map

1.4 Design Guidelines Purpose

The Forrestfield/High Wycombe Industrial Area Design Guidelines provide clear and readily understandable criteria aimed at ensuring a consistently high standard of development is achieved throughout the Design Guidelines Area. New development should result in a pleasant working environment, attractive streetscapes, and contribute to the protection of value in business investment within the area.

The Design Guidelines will also provide assistance to Shire of Kalamunda staff in assessing proposed developments.

The Design Guidelines contains principles, guidelines and some mandatory requirements relating to:

- Land use;
- Site development;
- Built form (including signage);
- Environmental management;
- Landscaping; and
- Site amenity.

The Design Guidelines also contains development application submission requirements, and detailed requirements for landscape plans.

1.5 Design Guidelines Objectives

- To encourage attractive developments that are well designed, with functional and efficient buildings and site layouts;
- To ensure that industries are environmentally compatible with surrounding zones and activities;
- To promote the development of high quality, attractive and sustainable landscaped areas and streetscapes;
- To promote greater sustainability through energy and water-efficient building design and site development.
- To achieve water conservation through sustainable stormwater management, water-wise landscaping and water efficient reticulation in accordance with the Water Sensitive Urban Design principles.
- To minimise the impact of new industrial development on the environment and amenity of neighbouring residential properties;
- To minimise the impact of new industrial development on identified sensitive areas such as native bushland and waterways;
- To avoid unsightly and poorly planned and maintained developments; and
- To maintain the value of existing and future business investment by insisting upon quality development throughout the Policy Area.

No new developments, nor the uses or processes carried out on-site, shall be permitted to adversely affect the amenity of the Design Guidelines Area or its immediate surrounds due to poor building or site appearance. The transportation or storage of materials and vehicles, the nature of the goods produced, emissions of waste products, noise, smells or smoke shall not be permitted to have an undue adverse impact on the amenity and environment of the locality.

1.6 Application of these Design Guidelines

The Design Guidelines document is adopted under clause 6.4 of Local Planning Scheme No. 3. It is to be used in conjunction with the Shire's Local Planning Scheme No. 3, and other relevant planning policies and guidelines.

It shall also be used in conjunction with the Shire's adopted environmental health and engineering regulations, policies and practices.

2.0 LAND USE

Land use within the Forrestfield/High Wycombe Industrial Area is governed by the Shire of Kalamunda Local Planning Scheme No. 3, Table 1.

The Shire of Kalamunda will endeavour to ensure compatibility of existing and planned land uses within the Design Guidelines Area. New developments must not unreasonably compromise or constrain future developments. It is preferred that new proposals will enhance existing and future developments.

3.0 SITE DEVELOPMENT

3.1 Building Orientation

The primary building entrance and façade shall front onto the primary street.

Wherever possible, buildings should be orientated and designed to be energy-efficient, and to conserve non-renewable energy.

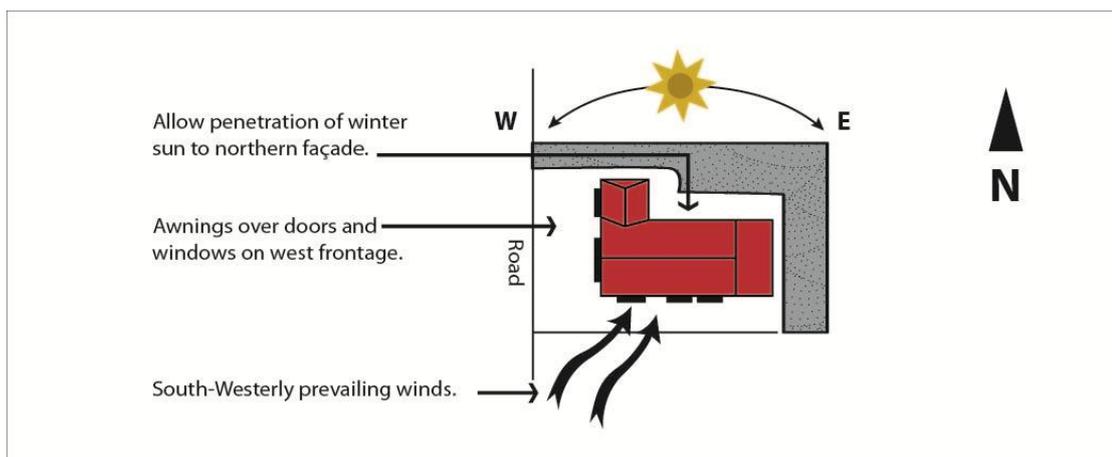


FIGURE 5 – Passive Solar Design Principles Applied to Building Orientation & Design

Passive solar design principles can include the following:

- Building orientation and wall openings should maximise exposure to the north and south;
- Building orientation and wall openings should maximise cross ventilation, especially cooling summer breezes from the south-west and south;
- The amount of walling and wall openings facing east and west should be minimised; or if this is not possible/practical, ensure adequate shading of the walls and wall openings; and
- Appropriate landscaping (trees, wall creepers, etc.) should be provided to create shade in summer, and to allow the penetration of winter sun.

3.2 Site Coverage

Site coverage within the Forrestfield/High Wycombe Industrial Area is governed by the Shire of Kalamunda Local Planning Scheme No. 3. The maximum site coverage for buildings is 60% of the total site area.

3.3 Plot Ratio

Plot ratio within the Forrestfield/High Wycombe Industrial Area is governed by the Shire of Kalamunda Local Planning Scheme No. 3. The maximum plot ratio of buildings to site area is 0.5:1.

3.4 Building Layout & Setbacks

Building setbacks will be established which give consideration to:

- Adjoining properties, uses and buildings;
- The bulk and scale of new developments in relation to the bulk and scale of developments on adjoining sites;
- Fire appliance access;
- The general streetscape; and
- Solar aspect and prevailing winds.

The following minimum building setbacks shall apply to land within the areas marked “Stage 1”, “Stage 2”, and “Stage 3” on **Figure 1** and zoned “Industrial Development”:

Zones	SETBACKS				SITE REQUIREMENTS		
	Front	Minor Street	Side	Rear	Site Coverage	Plot Ratio	Landscaping Strip (Road Frontage)
Industrial Development	20m ⁽¹⁾	10m ⁽²⁾	At the discretion of Council ⁽³⁾	At the discretion of Council ⁽³⁾	60 %	0.5	6m 8m along properties with frontage onto Sultana Road West

⁽¹⁾ Berkshire Road, Milner Road and Sultana Road West

⁽²⁾ All other roads (Nardine Close, Ashby Close and the future unnamed Road Reserve)

⁽³⁾ Proponents of new developments are encouraged to set back buildings a minimum of 3m from both the side and rear boundaries to assist with natural light penetration and natural cross-flow ventilation.

Within the area marked “Light Industrial” on **Figure 1**, the minimum setbacks applicable to land zoned “Light Industry” in Local Planning Scheme No. 3 shall apply.

The land between the street alignment and the front of a building may be used for access, the daily parking of vehicles or landscaping.

The setback area between the main building and any road must not be used for storage purposes, for loading or unloading vehicles, or for the parking of haulage or service vehicles, or for repairing and/or maintaining vehicles or items.

The front entrance door of the main office/administration should be visually obvious, and have a clear and safe pedestrian accessway leading to it from the visitors’ parking area.

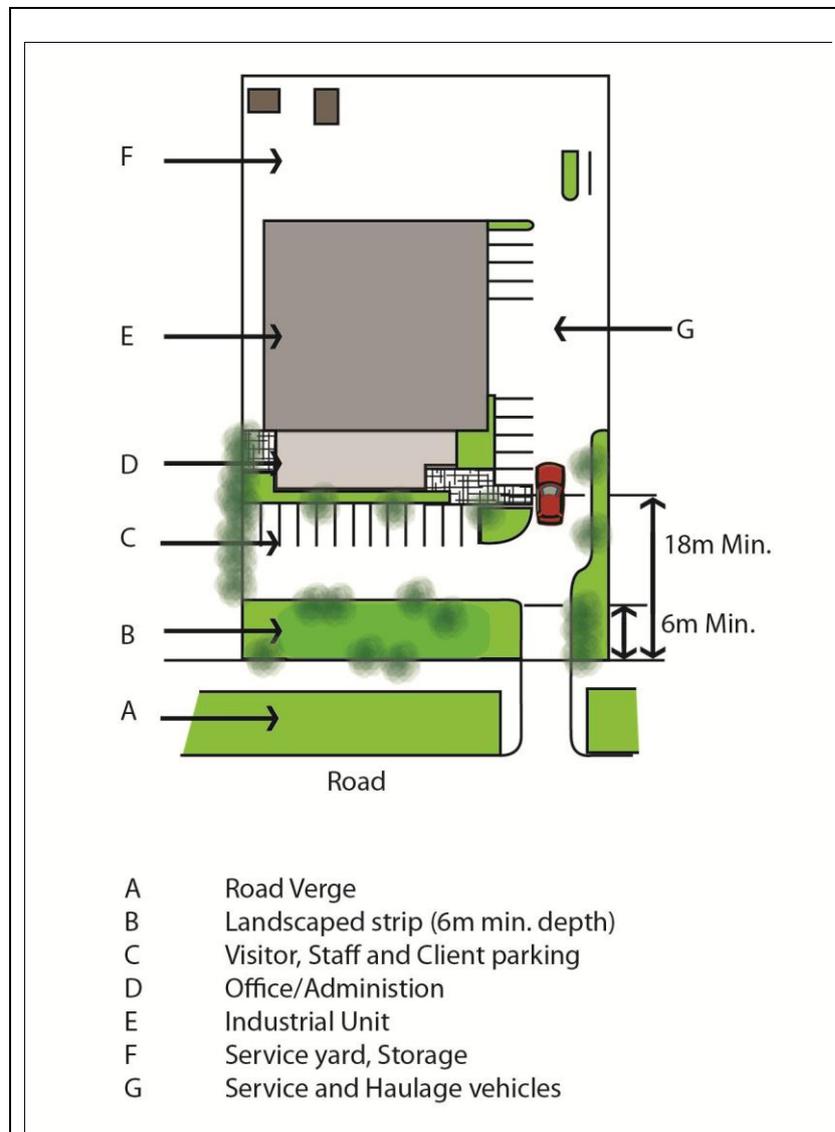


FIGURE 4 – Model Site layout

3.5 Vehicle Parking, Access & Circulation

Number of Car Parking Bays Required:

The provision of car parking bays for staff and visitors shall be in accordance with Clause 5.8 and Table 3 of LPS3.

LPS3 also allows the Shire, at its discretion, to apply a greater or lesser requirement for car parking bays than that stipulated as the minimum in Table 3 of the Scheme in accordance with Policy DEV 41.

Vehicle Access:

- All vehicle access must be contained on site.
- All vehicles must be able to exit the site in a forward direction.
- The number of access points to a site should be kept to a minimum.
- Access points should be designed to provide safe ingress/egress for vehicles and pedestrians.

Design of Vehicle Parking Areas and Accessways:

Accessways and parking areas must be planned and designed to achieve the following outcomes:

- Vehicle parking and circulation should be clearly marked and laid out and easily understandable by all users;
- Large expanses of parking are discouraged in favour of smaller modules broken up with vegetation and shade tree planting;
- Service and haulage vehicle parking areas are to be separated from visitor and staff parking areas, screened from the street, and located at the rear or sides of the buildings and behind the front building line;
- Within the service and haulage vehicle parking areas, large vehicle parking bays are to be located separate from small vehicle parking bays;
- Areas for loading bays, vehicle manoeuvring and outdoor storage are to be located separate from visitor and staff parking areas;
- External loading bays shall not be visible from primary street frontages, shall have access that is safe and convenient, shall be located at the side or rear of properties, and shall be screened from public streets by walls, landscaped earth mounds or dense planting;
- Clear paths are to be provided for pedestrian movement separate from areas of frequent vehicular movement;
- Parking areas for staff, clients and visitors are to be located adjacent to office/reception areas of buildings, with clear sight lines to entrances;
- Parking areas for staff, clients and visitors are to be provided with suitable species of canopy tree at a ratio of 1 tree per 6 car bays, spaced evenly throughout the parking area(s); [Further details provided in Section 6.0]
- Car parking areas are not to be used for temporary storage of goods, for servicing or for loading;



- Parking areas should be designed to channel rain water into areas set aside for planted vegetation;
- Parking for persons with disabilities is to be designed in accordance with the appropriate Australian and ACROD standards.
- Parking areas and access driveways must be paved or sealed with asphalt.

3.6 Pedestrians & Cyclists

In order to encourage staff members to travel to work by means other than the private car, new developments should provide end-of-trip facilities for pedestrians and cyclists. These could include secure bicycle storage, lockers and showers.

3.7 External Service & Storage Areas

- No open storage of goods, unserviceable vehicles or machinery shall be carried out within the front setback area (forward of the building line).
- All open storage areas shall be screened from the street and adjoining properties by landscaping, fencing and/or other means acceptable to the Shire of Kalamunda. Any screen fencing should use materials and colours that complement the main building design and, where possible, made to integrate with the building structure.
- Rubbish bin storage areas shall be screened from all road fronts. The dimensions and location of rubbish bin storage areas will be at the discretion of Council.
- All plant and equipment storage areas are to be adequately screened from public view from all road frontages.
- The preferred location for all external plant, service yards and bulk storage areas is at the rear of the lot.
- The storage of goods, materials, supplies or equipment is not permitted on road reserves, driveways, car parking areas, landscaped areas or public spaces.

3.8 Loading & Service Areas

- Loading bays and service dock areas shall be located at the rear or sides of buildings, and away from the main building entrance, or relatively visible areas.
- Where possible, service and loading areas should be enclosed within the building.
- Any external loading and service areas should be appropriately screened to minimise views from a public road and adjoining buildings.
- Loading areas should be designed to accommodate vehicular manoeuvring on site and should not prohibit on-site vehicular circulation or cause traffic queues.

3.9 External Lighting

- Lighting must be adequate to ensure a safe and secure environment.
- All external lighting shall be utilised in a manner which is consistent with the use for which it was designed (e.g., flood or spotlights, bollard lights, sensor lights, etc.)
- Beacons, search lights, blinking lights, flashing or changing intensity lights will not be permitted.
- Lighting should be directed away from adjacent buildings and any public roads.
- Security lighting should be confined to entrances and pedestrian areas and should not project onto any public road.
- All car parking areas, pedestrian routes and entrances shall be well lit. Parking area lighting should have a greater height than pedestrian area lighting, and be focussed downwards. Bollard lighting and pavement inset lighting is encouraged for pedestrian pathways.

3.10 Boundary Fencing

The intent of boundary fencing for individual premises within the Forrestfield/High Wycombe Industrial Area is to provide security for businesses without compromising the visual quality and overall character of the streetscapes.

- Fences and gates shall be integrated with site planning and the design of the building(s). Fencing shall generally be visually permeable and unobtrusive.
- Forward of the front setback line, the minimum fencing standard is an 1800mm high metal tubing framed vertical pale and horizontal rail fence with powdercoat finish. Black is the preferred colour, as it tends to “disappear” into its surrounds. The fence must be predominantly “open” in appearance.



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- Behind the front setback line, the minimum standard for side and rear boundary fencing is black PVC galvanised link mesh fencing (barbed wire on top is permitted). Palisade and welded mesh fencing may also be acceptable. No link mesh fencing is permitted forward of the front setback line.
- All fences should be durable and resistant to weather conditions and vandalism.
- Sliding front gates are preferred. Where swinging gates are being installed on boundary fencing, these shall open inwards away from the street.
- Electrified fencing will only be permitted if considered suitable and necessary by the Shire of Kalamunda.
- The style, dimensions, materials and colours of all fencing shall be provided as an integral part of the Development Application.



4.0 BUILT FORM GUIDELINES

4.1 Building Design, Character & Detailing

Buildings should demonstrate excellence in design, detailing and construction, and incorporate best practice environmental sustainability.

A diversity of building designs will be encouraged. Buildings should have a modern industrial appearance, and the use of innovative, functional and attractive designs and building materials will generally be supported.

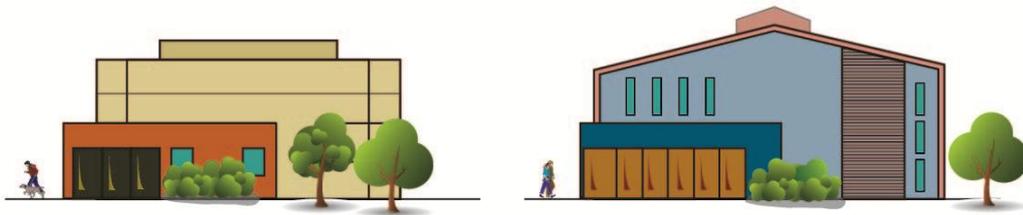
Buildings should be of a contemporary style, with office areas having a more “human” scale and located near the street frontage.



The office/administration building should be located near the street frontage, and be of a more “human” scale than its associated warehouse or factory unit.

Buildings must be designed to address the street, and significant emphasis must be placed on providing an attractive and interesting front elevation. The main entrance to the building must be clearly visible from the street, and be obvious to the arriving visitor. It should be at or near the front of the main building.

- The front elevation must display the corporate image, and have an inviting entrance, preferably with some weather protection such as an awning, canopy or verandah.
- A moderate to high level of articulation of building frontages is strongly encouraged. A high standard of architectural and building design is required.
- Building elevations on corner lots must address both street frontages. The side elevation should not be “forgotten” when the building is being designed and detailed.
- Rooftop structures such as plant and machinery should be located, as far as practical, in a position where it will be least visible from ground level.
- Monolithic buildings should be avoided. The mass of large buildings should be broken into groups of clusters or sub-parts where possible to reduce perceived scale.



- Large unrelieved expanses of blank wall or roof on one plane with uniform finishes must be avoided where they can be viewed from a street. This includes large expanses of mirrored glass.
- Where more than one building is planned for a site, they should be sited and designed to form an integrated “whole”, and present a visually harmonious image.
- Building design should be as flexible and innovative as possible to facilitate the changing needs of occupiers and their processes.

4.2 Materials, Finishes & Colours

Sustainability

Building materials should be chosen which maximise durability, minimise maintenance, ensures good performance having due regard to the climate, maximises energy efficiency, promotes recycling, and maximises the use of renewable resources.

Design

New buildings should be designed with facades divided up into contrasting smaller areas or panels through the inclusion of different materials, the use of colour and various forms.

- A moderate to high level of articulation to provide visual interest and to “break up” building frontages is strongly encouraged. This can be achieved through one or more of the following treatments:

- incorporating “in and out” walls;
 - including a high ratio of glass to solid wall;
 - using multiple façade materials (2-3 different appropriate materials on each street facade);
 - including bright colours on buildings as a “splash” feature or as a trim (i.e., as a limited special effect); and
 - using interesting roof shapes & roof angles (silhouettes).
-
- Different materials such as concrete panels, profiled metal sheet cladding and fibre cement cladding can be used for larger areas, with face brickwork, stone panels and weatherboard panels as features, either separately or in combination.
 - In addition, other feature elements can be used to achieve good, attractive design. For example, louvred vents and screens, projecting sun screens over windows, and exposed steel columns and bracings
 - Consideration should also be given to dividing the façade(s) into top, middle and bottom sections using different materials and/or graded colours.
 - Projecting sun screens over windows and overhanging roofs can also create interesting shadows on façades.

Building colours should generally be sympathetic and complementary with the natural environment (soils and vegetation), as well as the site landscaping. Generally, the use of dark colours should be reserved for the base of buildings, with lighter colours used for the upper levels.



Strong primary colours should be used sparingly to highlight building features or trim, and to add interest and relief to building façades.

Large areas of one material should be treated with muted colours and tones, avoiding strong hues.



Large areas of one material can be visually "broken up" and made to look more attractive and interesting by the judicious use of colour.

In this example, the visual impact of the large side wall with roller doors has been reduced by the use of two different but complementary colours.

Where a development is comprised of multiple buildings, or multiple tenancies within one building, the thoughtful use of complementary colours, materials, finishes and detailing can allow each business unit to be easily distinguishable and identifiable.

4.3 Plant & Equipment

All plant and equipment should be screened from public areas, or located at the rear of premises.

The exception to this may be where ductwork, stacks, tanks or flues that are necessary for the building to function are designed and treated as feature elements.

- Consider using plant and equipment as design features;
- Conceal unsightly plant such as air conditioning units;
- Use passive sustainable elements (such as water tanks and ventilation louvres) as design features and express these through the use of colour or by highlighting external structural elements.

4.4 Outbuildings & Other Structures

Where there are numerous separate buildings on the site, the design and location of each should be considered at the time of initial site planning. This will ensure that all buildings on the site will present as one integrated development.

This initial planning should extend to include possible future expansion of buildings, additional buildings and staging of development. The use of building forms, materials and colours should be complementary and consistent.

4.5 Signage

High quality, integrated signage is an important design element. Development proponents must provide an overall signage strategy, including proposed business advertising, information signage and directional signage, as an integral part of the development application process. An unnecessary proliferation of signs shall be avoided.

Advertising Signs

Advertising signs attached to buildings shall be designed to be an integral part of the building – i.e., recessed into the façade, fascia or awnings, and co-ordinated in scale, colour and style. Signs can be incorporated as three-dimensional elements to add quality to the overall design effect.

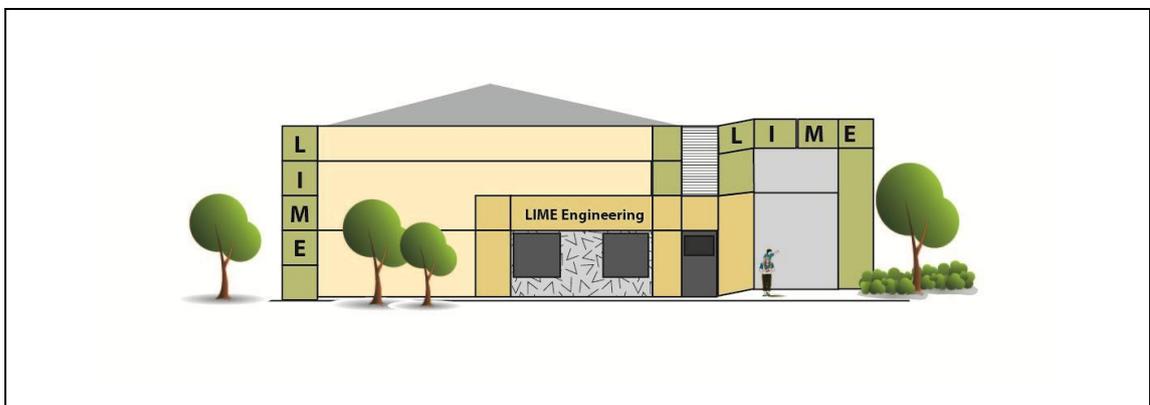


Figure 6 – Appropriate Locations for Corporate Signage

- All advertising signs shall be designed to be an integral part of the building fabric, and shall be of a standard equal to, and consistent with, the building design and detail;
- All signs located throughout the lot shall be of a consistent design character to maintain the amenity of the area;
- Only one free-standing identification sign or composite advertising sign is permitted per lot;
- Where multiple occupancy is proposed, the composite sign may have only one panel per occupancy; and
- Each premise will clearly display their street number.



Advertising signage information shall be limited to:

- The name, business logo, address, telephone number, email address and website associated with the premises;
- The name of the business or businesses contained within the premises; and
- The type of services, activities or products available within the premises.

Some signs and sign types will not be permitted. These are:

- Roof-mounted signs or signs which project above the ridge height of the building;
- Moving, flashing, pulsating, intermittent or sound-emitting signs;
- Changeable message signs;
- Sequined or glittering signs;
- Unrelated or “third party” signs;
- Signs attached to fences;
- Billboards;
- Any portable advertising sign located on the road reserve;
- Tower and monolith signs; and
- The excessive application of modern standardised corporate advertising.

Directional and Information Signs

Directional signage should assist visitors to the site, and include entry and exit signs, parking controls, and signs clearly indicating delivery and reception areas.

Directional signage should ideally be part of an overall signage “family” of complementary fonts, colours and other related imagery.

5.0 ENVIRONMENTAL MANAGEMENT

Among other things, the Shire of Kalamunda will be encouraging site and building design based on environmentally sustainable principles including correct solar aspect, appropriate materials and finishes, natural ventilation, water conservation and reuse, embodied energy and energy efficient operations, and the “greening” of sites and streetscapes.

5.1 Landscaping

Intent:

The Shire of Kalamunda is determined to oversee the development of the Forrestfield/High Wycombe Industrial Area as a high quality, attractive, sustainable and functional “estate”. An integral part of this “vision” will be the development of a high standard of landscaping – principally tree and shrub planting, as well as the protection of existing high quality natural vegetation.

Considering the large scale of most industrial buildings, larger-scale trees should form a significant proportion of plantings. These can be complemented by mass plantings of water-wise low shrubs, herbs, ground covers and strappy leaf plants between the trees. The use of plants which have colourful flowers and leaves is particularly encouraged.

Car parking areas must be well planted with shade trees to visually reduce the apparent size of the hard paving, to reduce the amount of radiated heat and the “heat island” effect which can occur during summer, and to provide welcome shade for parked cars.



The Shire has responsibility for the development and ongoing maintenance of landscaping in public areas: i.e., road reserves, parks and nature reserves, however Developer Contributions cover for the first two years from the point of development.

The Shire will undertake the landscaping of these public areas in partnership with private land owners, who will be responsible for the landscaping of their own properties. The establishment and ongoing maintenance of landscaped areas on private land will be an integral part of the site planning and development approval process.

Landscape Purpose:

Private landholdings will be landscaped in a manner which achieves the following objectives:

- to provide an attractive setting, “front yard” and entry for developments;
- to provide attractive streetscapes which complement street tree planting and other landscape measures undertaken by the Shire within the road reserves;
- to screen unsightly on-site activities or areas;
- to provide shade over paved areas, especially car parking areas;
- to provide plants that are hardy and drought-tolerant, which provide habitat and food for local fauna, and require minimal herbicides and pesticides; and

- to provide a high level of amenity for workers and visitors by providing summer shade, winter sun, and wind breaks.

Landscape Requirements:

- With the exception of all lots abutting the south side of Sultana Road West east of Milner Road, where an 8m landscaping Buffer is required, the first 6m (minimum) of each street frontage of every lot within the Industrial Development Zone shall be set aside, developed and maintained as landscaped (planted) space. The landscaping of this space shall contribute positively to the character of the streetscape.
- Landscaping behind fences should not form a dense screen, except where it is required to screen outdoor storage areas or plant and equipment.
- Perimeter fences may be placed behind landscaping strips, however the landscaping outside the lot boundary should generally require only low maintenance (street trees, mulch) and should not easily trap wind-blown refuse.



- Wheel stops at the front ends of car parking bays must be used to prevent cars damaging trees.
- All landscape designs should be practical and easily maintained.
- All applications for Approval to Commence Development by the Shire of Kalamunda to include a detailed landscape plan as documented in **Appendix 2** of this Design Guidelines.

- Narrow landscaped strips (i.e., less than 2m in width excluding kerbs and other barriers) are ineffective and should be avoided.
- Plantings should generally allow views into and across industrial sites rather than seeking to screen them entirely from view. However, landscaping shall be used, perhaps in conjunction with screen fencing, to hide outdoor storage areas.
- Indigenous and “water-wise” plant species are strongly preferred. Large areas of grass should be avoided.
- Significant tree planting should be a feature of every landscape plan. Trees shall be planted within the landscape strip of every street frontage at the minimum rate of one tree for every 6 metres of total lot frontage. These should preferably be planted at staggered intervals in two rows.
- The use of mature/advanced plants to create an immediate visual impact and to enhance the amenity of the area is preferred.
- The landscape design for each site shall be undertaken by a qualified landscape professional. All landscaping and planting shall be undertaken by a qualified contractor.
- Proponents of new developments must make every endeavour to retain any existing large, healthy, mature trees on site, and accommodate their retention and ongoing protection in any site and landscape plan if possible and practical.



Landscape Requirements for Lots Zoned Industrial Development Abutting the South Side of Sultana Road West and Located East of Milner Road:

These lots are planned to be developed for industrial purposes as part of Stage 1, and well before lots on the north side of Sultana Road West in Stage 3 are developed. The lots on the north side of Sultana Road West are currently being used for rural residential-type development. For this reason, an additional level of visual protection from new industrial development for existing residents is warranted.

Therefore, for lots abutting the south side of Sultana Road West and located east of Milner Road, the first 8m (minimum) of the Sultana Road West frontage of every lot shall be set aside, developed and maintained as landscaped (planted) space. The landscaping of this space shall act as a landscaped buffer and provide adequate visual screening from the road of the buildings and activities on the lot, and contribute positively to the character of the streetscape.

Apart from this requirement, all other landscaping requirements listed in the previous section shall apply to lots zoned Industrial Development abutting the south side of Sultana Road West and located east of Milner Road.

5.2 Landscape Reticulation

To ensure plantings are successful, landscaped areas should be irrigated with an appropriate reticulated watering system. Land owners should:

- Install a low flow trickle irrigation system;
- Install a programmable water controller/timer system; and
- Direct rainwater runoff from buildings and hardstand areas to the landscaped areas.

Irrigation should take place at night or early morning to reduce evaporation losses.

It is also recommended that land owners install external rainwater tanks to irrigate planted areas (and/or provide water for internal domestic use such as toilet flushing).

5.3 Rainwater/Stormwater Disposal & Harvesting

Pervious surfaces should be used wherever possible.

All impervious surfaces must be adequately served with appropriate stormwater inlets and on-site pervious drainage swales to ensure all stormwater is handled within the site boundary or treated appropriately prior to legal discharge.

Stormwater is not to be discharged to adjoining properties.

Parking areas should be designed to channel some stormwater into areas set aside for planted vegetation. Water-sensitive urban design measures should be incorporated into site design, including:

- Using grassed swales instead of conventional kerbing and channel drainage;
- Using filter strips such as a maintained grass or vegetated strip; and
- Using stormwater infiltration measures at the end of swales or open drains.

Stormwater runoff from roofs should be sent to rainwater tanks that are plumbed in to irrigate landscaped areas, or for showering and toilet flushing.

Surface grading of all sites must be designed to eliminate ponding or back-up of water.

5.4 Waste Management

Waste storage and disposal facilities should be integrated with the site and building design.

Waste and refuse should be stored in a purpose-built facility, and screened from any adjacent street and staff amenity/recreation areas. Where possible these areas should be contained within the building. Wind-proof cages should be used to prevent scattering of waste.

All inadvertent discharge from equipment and vehicle cleaning, servicing etc., (not captured by the wastewater system) must be cleaned and filtered prior to entry into the stormwater system.

Recycling storage facilities should be provided

5.5 Natural Light & Ventilation

To complement the solar passive site layout and building orientation guidelines described in Section 4.0, the following building design initiatives are aimed at conserving non-renewable energy, and improving employee comfort by assisting the penetration into buildings of natural light and ventilation.

Natural Light:

Rooflights have the ability to introduce UV filtered sunlight into the centre of a building. Translucent rooflight material is recommended.

Clerestory windows can introduce natural light (preferably diffused southern light) into the centre of a building, thereby reducing the need for artificial lighting.

Ventilation:

Side wall ventilation openings can be used to encourage cross-ventilation through a building. Clerestory windows provide an outlet for rising warm air within a building, and also allow cross-ventilation.

Small wind-powered ventilation turbines located on a roof increase a building's air circulation by aiding the extraction of hot air from a building, which then allows cooler air to enter at a lower level. Large roof vents can also assist this process.

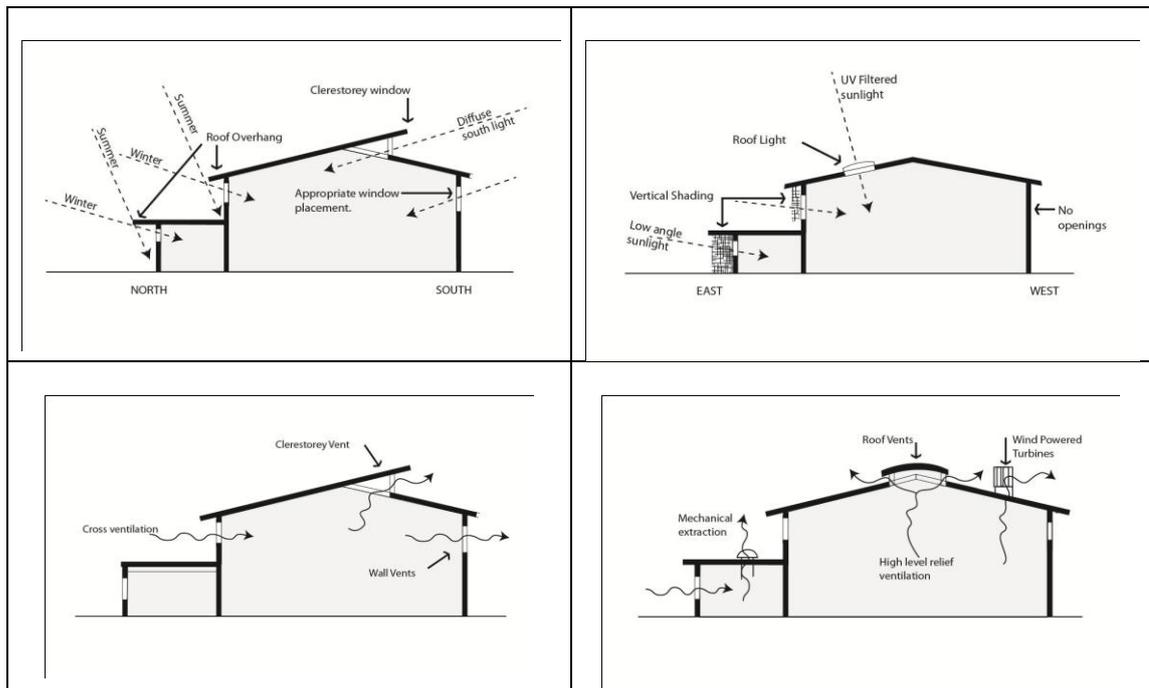


FIGURE 7 – Provision of Cross Ventilation & Natural Lighting

5.6 External Lighting of Buildings & Spaces

- No glare or light spill from a property should adversely affect adjoining properties or passing motorists. Baffled or directional lighting should be used to minimise this eventuality.
- Energy-efficient lighting systems are recommended for external areas.
- Lights controlled by timer controls or motion sensors are also recommended to save energy.

5.7 Internal Lighting of Buildings

It is recommended that:

- energy efficient light fittings be used; and
- lights controlled by timers, photosensitive cells or motion sensors be used where possible and appropriate.

5.8 Water Use & Storage

The following recommendations are consistent with the Building Code of Australia 5 Star Plus energy and water efficiency measures:

- install solar or 5 star gas (or heat pump) hot water systems;
- install water efficient showerheads;
- install water efficient tap fittings in all kitchen sinks and bathroom basins; and
- fit water efficient dual flush toilets, and/or waterless urinals.

It is also recommended that land owners install external rainwater tanks to irrigate planted areas (and/or provide water for internal domestic use such as toilet flushing). The recycling of grey water will be encouraged.

6.0 SITE AMENITY

6.1 Landscape Maintenance

Conditions of consent or planning approval will require ongoing maintenance of the following items:

- All accidental damage or vandalism should be repaired promptly.
- Preventative maintenance should be undertaken as part of a regularly scheduled process to maintain the appearance, efficiency and safety of the site. A site maintenance manual and schedule should be prepared, updated and used on a recurring basis.
- All dead plants, branches, weeds and leaf litter should be removed on a regular basis. All dead plants should be replaced promptly (subject to prevailing weather conditions).
- Irrigation systems should be checked regularly for leaks and damage.

6.2 Building Maintenance

All buildings, car parks, signage and paved areas are to be maintained to a high level of presentation.

- All painted surfaces are to be kept in good repair with regular scheduled repainting as required.
- Preventative maintenance should be undertaken as part of a regularly scheduled process. A building maintenance manual and schedule should be prepared, updated and used on a recurring basis.
- Safety and health must be protected at all times. All accidental damage or vandalism should be repaired promptly.

6.3 CPTED & Safer Design

Site layout and design should conform to the principles of “Safer Design”, or “Crime Prevention through Environmental Design” (CPTED) principles. These include the provision of:

- clear sightlines;
- pedestrian safety, good connections and access;
- active and passive surveillance of the public realm from private property;
- “neck to knee” clearance zones in landscaped car parks for better surveillance;
- “open” planting adjacent to public thoroughfares;
- good lighting of car parks and pedestrian routes;
- visually permeable fencing along open space edges to sites;
- clear direction signage;
- vandal-proof fittings on furniture, lights and other items; and
- robust materials.

7.0 DEVELOPMENT ADJACENT TO THE NORTHERN BUFFER ZONE (Poison Gully)

As part of the Indicative Development Plan for Stage 3 of the Forrestfield/High Wycombe Industrial Area, a “Vegetation Protection/Enhancement Area” is proposed for the land containing, and adjacent to, Poison Gully. This land is intended to act as a buffer zone between the industrial area and the (mostly) residential areas located immediately to the north, and is Bush Forever land.

For lots abutting the buffer zone, the following additional requirements apply:

- Industrial activities which generate significant noise levels may not be permitted. Noise activities may only be permitted if the noise is contained within the site, for example, within a solid masonry building. Environmental Protection Authority noise control policies should also be consulted.
- The rear setback for any proposed new building, and the activities that are intended to take place within the rear setback, will be carefully considered by the Shire of Kalamunda, with a view to minimising any potential negative impacts on nearby residents and vegetation/habitat within the neighbouring Poison Gully.

- A strip of land 5m in width and abutting the buffer zone shall be planted with species of local provenance, and protected and maintained.
- No new developments, nor the uses or processes carried out on-site, shall be permitted to adversely affect the amenity of the nearby bushland and urban areas due to poor building or site appearance. The transportation or storage of materials and vehicles, the nature of the goods produced, emissions of waste products, noise, smells or smoke shall not be permitted to have an undue adverse impact on the amenity and environment of nearby residents.

*

APPENDIX 1 – Development Application Requirements

1	Completed Schedule 6 Form signed by the property owner.
2	Prerequisite planning fee.
3	Copy of Certificate of Title.
4	Detailed written statement in support of proposal, including but not limited to: <ul style="list-style-type: none"> ▪ Type of use/development. ▪ Hours of normal and peak operation, and number of employees. ▪ Compliance with the Town Planning Scheme, these Design Guidelines, and any other applicable Detailed Area Plans, Structure Plans, Outline Development Plans and other applicable Shire of Kalamunda policies. ▪ Justification for any proposed variations. ▪ Distance of all structures from nearest boundaries. ▪ Existing and proposed building envelope (if applicable)
5	Site plan (4 copies) of a scale of no less than 1:500 showing: <ul style="list-style-type: none"> ▪ Lot number(s), land area, boundaries, dimensions of the site and a north point (preferably to the top of the page). ▪ Location of existing buildings and landscaping to be retained. ▪ Existing ground features including watercourses. ▪ Location of proposed buildings and landscaping. ▪ Details of effluent disposal systems. ▪ Gully and manhole locations, pipe sizes, subsoil drainage requirements, falls to paved areas, falls to landscaped areas, proposed connection of Shire system and soak wells. ▪ Existing and proposed contours and floor levels, embankments and retaining walls. ▪ Location and type of any easements. ▪ Details of roads, accessways, crossovers, visitor and staff car parking, commercial vehicle parking and manoeuvring, location of loading/unloading areas, fencing location and type, and any proposed verge treatments. ▪ Details of any open space and staff amenity areas. ▪ Schedule of materials, colours and finishes. ▪ Location and details of any cut and fill, and method of retaining. ▪ Location and type of bin storage areas and recycling facilities. ▪ Statement regarding all energy efficiency measures proposed, and how it is planned to minimise water use.
6	Floor plans (4 copies) of a scale of no less than 1:500 showing: <ul style="list-style-type: none"> ▪ Internal dimensions. ▪ The uses to take place in each part of the building(s) ▪ Public & staff facilities clearly marked. ▪ All entrances and fire exits.
7	Elevations (4 copies) of a scale of no less than 1:500 showing external dimensions, fixtures & lighting details.
8	Coloured streetscape elevation(s) (4 copies) for all developments exceeding \$1M.
9	Signage strategy. (Advertising, information and directional)
10	Landscape plan. (See Appendix 1)
11	Landscape reticulation plan. (See Appendix 1)

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APPENDIX 2 – Landscape Plan & Reticulation Plan Requirements

Landscaping has the potential to improve the visual amenity and environmental sustainability of all urban areas, including light industrial areas. Landscaping should not only complement the appearance of a proposed development but also that of surrounding land uses. Consequently the Shire of Kalamunda requires that detailed landscape and reticulation plans accompany all new industrial development applications.

Landscape Plans

A landscape plan must include the following information:

- A site plan with a scale of not less than 1:200 illustrating all the areas proposed to be landscaped.
- A legend of plants showing botanical names of the proposed vegetation types.
- Quantity of plants, their spacing, and landscape vegetation.
- Pot sizes of plants at the time of planting.
- Identification of existing vegetation types, their botanical names and their intended use.
- Details of ground treatment such as paving, grass, etc.
- Details indicating how water harvesting of impervious surfaces will be undertaken and used to irrigate landscaped beds.
- Approximate location of neighbouring buildings to fence lines.
- Location of any existing, and proposed, fences.

Landscaping is required to be installed in accordance with an approved landscape plan.

Landscaping on Council Verges

- All landscape plans must clearly show any proposed treatments or landscaping proposed to take place within the Council verge: e.g., grass and paving.
- Any existing trees located on the Council verge must be shown.
- No street trees shall be removed unless written approval is obtained from the Manager Parks.

Shade Tree Requirements for Car Parking Areas

The Shire requires proponents to plant a minimum of one shade tree for every 6 car bays provided on the lot, to Council's satisfaction.

Reticulation Plans

A reticulation plan will accompany the landscape plan. It shall detail:

- Scheme and bore water requirements.
- The approved bore licence from the Department of Environment and Conservation.
- Any other proposed sources of water (e.g., rainwater tanks).
- Locations of compensating basins and sumps.
- Methods of reticulation (such as trickle or fixed systems).
- Indicate the method of operation (automatic/manual).
- The watering schedule.

Planning of Indigenous Species

Indigenous and “water-wise” plant species are strongly preferred. Indigenous plants are adapted to the local climate, and provide habitat and food for local fauna. Large areas of grass or lawn should be avoided.

The Shire encourages all proponents of new developments to use indigenous vegetation species when preparing landscape plans.

Please contact the Shire’s Planning Services for enquiries.

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P-DEV 63 – Consulting Rooms in Residential Areas	
Management Procedure	Relevant Delegation

Purpose

1.0 Background

This Policy has been prepared to ensure Consulting Rooms in Residential Areas maintain high quality residential amenity and provide an opportunity for small scale Consulting Rooms to be established to service local communities without impacting on the residential amenity of the area.

The Local Planning Scheme No. 3 (LPS3) was amended through Scheme Amendment No.81 to enable development applications for "Consulting Rooms" to be considered in areas zoned Residential and designated Residential under a Structure Plan.

2.0 Application of the Policy

All development applications seeking approval for the land use of "Consulting Rooms" within areas zoned Residential or designated Residential under a structure plan must give due regard to this Policy.

3.0 Statutory Authority / Legal Status

This Policy has been prepared under and in accordance with Schedule 2, Clause 3(1) of the *Planning and Development (Local Planning Scheme) Regulations 2015* and Part 7 of the Residential Design Codes of Western Australia.

(a) Relationship to Local Planning Scheme No.3.

The planning policy has been prepared, advertised and adopted pursuant to Part 2 LPS3. The policy augments and is to be read in conjunction with the provisions of LPS3 relating to development.

If there is a conflict between this local planning policy and LPS3, the Scheme prevails.

(b) Relationship to other state planning/ development control policies.

This policy has due regard to and should be read in conjunction with state planning policies. Of particular relevance to this policy are:

- i) State Planning Policy 1 – State Planning Framework.
- ii) State Planning Policy 3.1 – Residential Design Codes.
- iii) State Planning Policy 3.7 Planning in Bushfire Prone Areas.
- iv) State Planning Policy - Liveable Neighbourhoods.

(c) This policy must be read in conjunction with City of Kalamunda Local Planning Policies.

Local Planning Policies relevant to this policy are:

- i. Local Planning Policy P-DEV 20 Outbuildings and Sea Containers.
- ii. Local Planning Policy P-DEV 45 Public notification of planning proposals.
- iii. Local Planning Policy P-DEV 57 Street Fence, Wall and Gate Policy.
- iv. Local Planning Policy P-DEV 61 Retention and Upgrade of Grouped Dwellings.
- v. Local Planning Policy P-DEV 54 Dual Density Design Guidelines.

4.0 Policy objectives

The objectives of this policy are to:

- a) To ensure Consulting Rooms maintain the amenity and character of the areas they are proposed; and
- b) To streamline the assessment process for minor Consulting Room proposals.

5.0 Definition of Consulting Rooms

The use classification of "Consulting Rooms" is defined in Schedule 1, Part 6, Clause 38 of the *Planning and Development (Local Planning Schemes) Regulations 2015* as follows:

"Consulting rooms means premises use by no more than 2 health practitioners at the same time for the investigation or treatment of human injuries or ailments and for general outpatient care."

6.0 Policy Statement

6.1 Existing Amenity

Development Applications must demonstrate acceptable impact with regard to:

- a) Traffic Impact;
- b) Noise Attenuation;
- c) Visual Privacy;
- d) Overshadowing; and
- e) Streetscape and Urban Design.

6.2 Built Form

Development Applications must demonstrate acceptable impact with regard to:

- a) Building design consistent with the prevailing streetscape;
- b) Bulk and Scale in the context of the development; and
- c) Setbacks consistent with prevailing streetscape.

6.3 Landscaping

Development Applications must demonstrate acceptable design with regard to:

- a) Landscaping, a Landscape Plan is to be provided for consideration prior to determination;

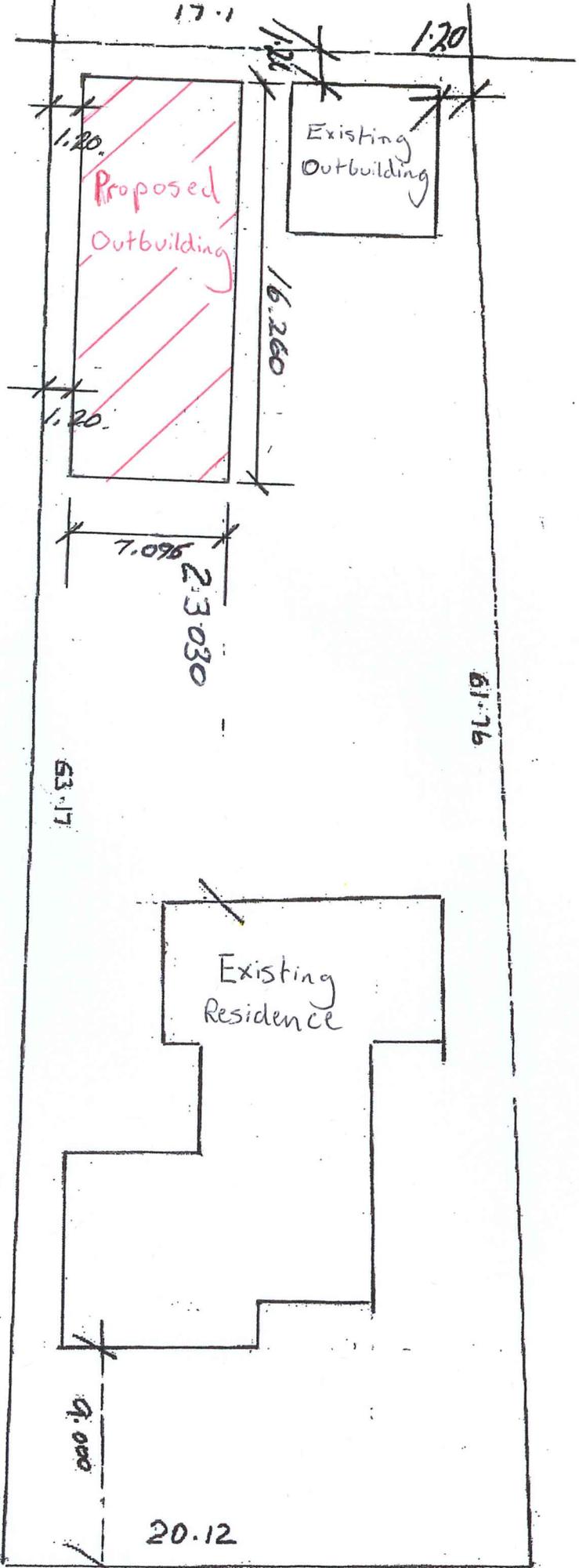
- b) Where parking is proposed within the front setback areas, a minimum three (3) metre wide landscaping strip be provided between the lot boundary to any road frontage and the proposed car parking;
- c) A minimum 1.0m landscaping strip adjoining the perimeter of any onsite parking area is to be provided;
- d) One (1) shade tree is required for every two car parking bays, including accessible bays;
- e) Adjoining verge areas are required to be landscaped, reticulated and maintained to the satisfaction of the City; and
- f) Verge areas are not permitted to be paved, constructed, or sealed, with the exception of crossovers and footpaths.

6.4 Hours of Operation

Development Applications must demonstrate acceptable impact with regard to:

- a) Not opening prior to 7:00am on weekdays;
- b) Not operating after 6.00pm on weekdays;
- c) Not operating prior to 8.00am on Saturdays;
- d) Not operating after 5.00pm on Saturdays; and
- e) Not operating at all on Sundays or Public Holidays.

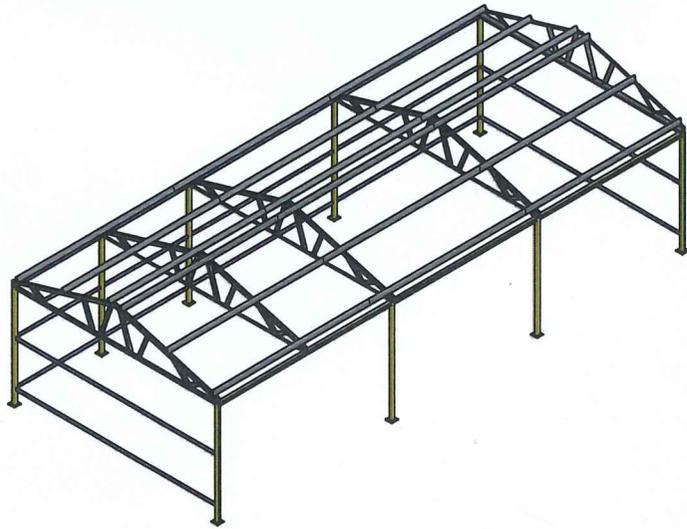
Related Local Law	
Related Policies	
Related Budget Schedule	
Legislation	<i>Local Government Act 1995 Planning and Development Act 2005 Planning and Development (Local Planning Schemes) Regulations 2015</i>
Conditions	
Authority	
Adopted	Next Review Date



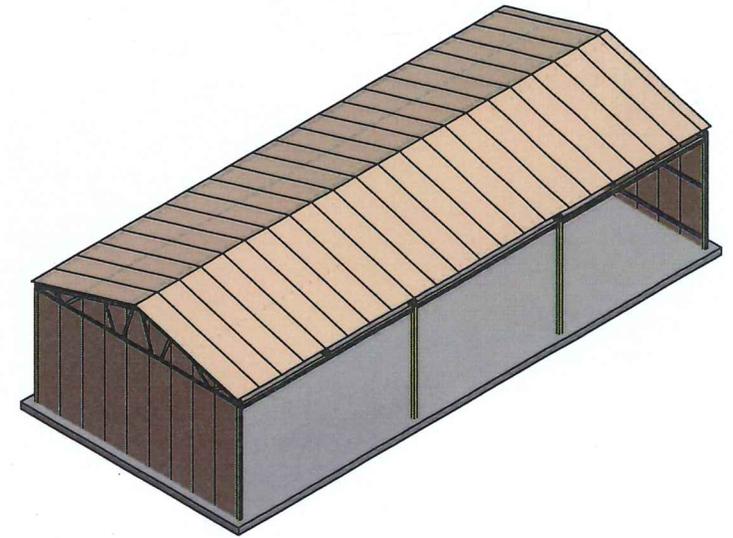
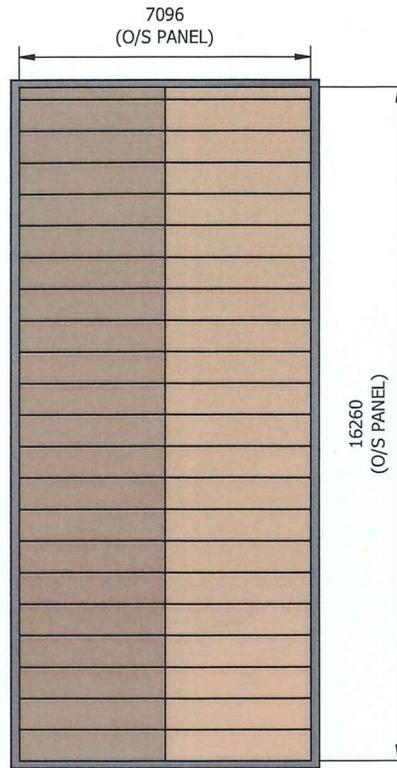
PROPOSED
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SHED/GARAGE

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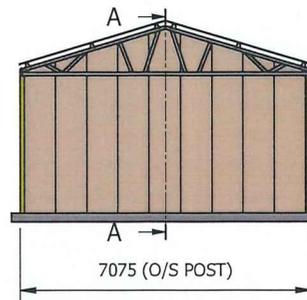
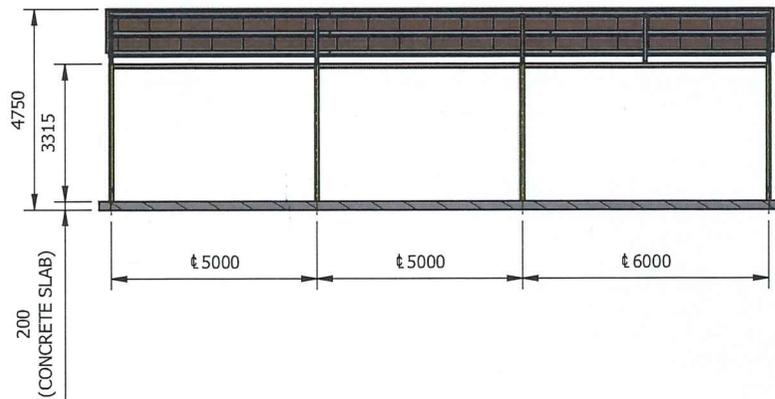
**ANDREW'S WORKSHOP
(ISO VIEW - SIDE + TOP PANELS
& CONCRETE SLAB REMOVED)**



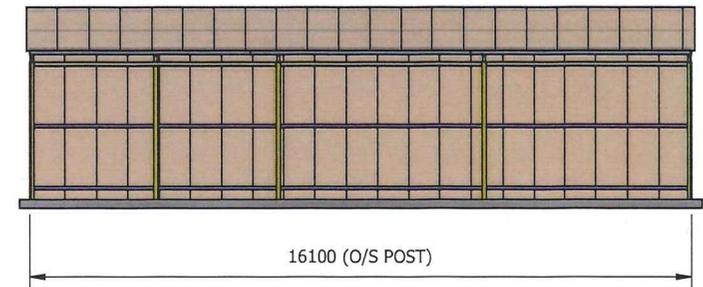
**ANDREW'S WORKSHOP
(ISO VIEW)**

(Applicant has reduced wall height to 3m.)

A-A (1 : 125)



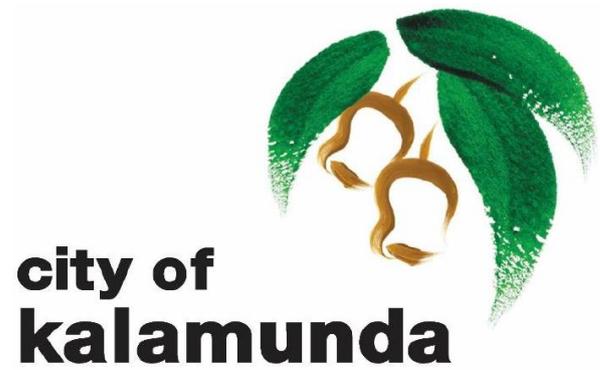
**ANDREW'S WORKSHOP
REV 1**



Submitter Number	Comment	Officer Comment
1	<p>Objection</p> <p>Visual Impact-</p> <p>a) A commercial sized shed is not an ideal view from my residential backyard due to the pitched roof height (4.75m).</p> <p>Audio Impact-</p> <p>b) Over the last 5 years, I have tolerated trucks, forklifts, grinders, generators being run on weekends and in the evenings from the owner. The oversized shed will cause an increase in noise.</p> <p>Applicant owns but does not live on the land-</p> <p>c) I haven't complained about this in the past, but the size and nature of the shed is extreme for a block that the landowner does not currently live on. It begs the question of what he is proposing to use this shed for, as it is clear this is not your average DIY/garden shed that you would expect in our area.</p>	<p>a) Noted, the proposal has no windows on the eastern boundary façade so therefore there will be no overlooking onto the neighbouring property. The proposal is fully compliant with the visual privacy requirements under the Residential Design Codes, (R Codes). The height is non-compliant and can be reconsidered.</p> <p>b) In respect to the noise pollution the proposal is required to comply with <i>The Environmental Protection (Noise) Regulations 1997</i>. The workshop would be conditioned to prohibit any habitation, commercial and industrial uses. The size of the shed will not necessarily cause an increase in noise, but it may provide the means to conduct more work.</p> <p>c) Noted but it is not a planning concern that the applicant does not live on the property. The shed size could allude to a different use.</p>

<p style="text-align: center;">2 and 3 (From one landowner)</p>	<p>Objection</p> <p>a) This shed does not conform with shire regulations for height and floor space area. We feel visual impact it will be great as the proposed block already is higher than ours.</p> <p>b) The owners do not reside at this address and wants to use this to restore old cars and trucks. We are concerned about the hours these works will be carried out and what will be the impact on the environment. We are also concerned Owner will be running his landscaping/earthmoving business from these premises as he has tipper truck, excavator, skid steer and forklift. Once the outbuilding is approved there will be no restrictions on what is done there and the noise that is made.</p> <p>c) We also believe the houses on Bungendore are rentals, so you will not get a true representation of how the owners feel.</p>	<p>a) Noted, the proposal will be slightly higher from 7 Acacia Road's property. A condition will be imposed to modify or remove the existing outbuilding to make the floor space more compliant with the City's Planning Policy P-DEV 20 Outbuildings and Sea Containers.</p> <p>b) In respect to the noise pollution the proposal is required to comply with The Environmental Protection (Noise) Regulations 1997. The workshop would be conditioned to prohibit any habitation, commercial and industrial uses. The size of the shed will not necessarily cause an increase in noise, but it may provide the means to conduct more work. The business has been noted.</p> <p>c) This is not a valid planning concern. It is noted that both the landowners and occupiers were contacted for comment, where only one household responded.</p>
<p style="text-align: center;">4</p>	<p>Non-Objection</p>	<p>Noted.</p>

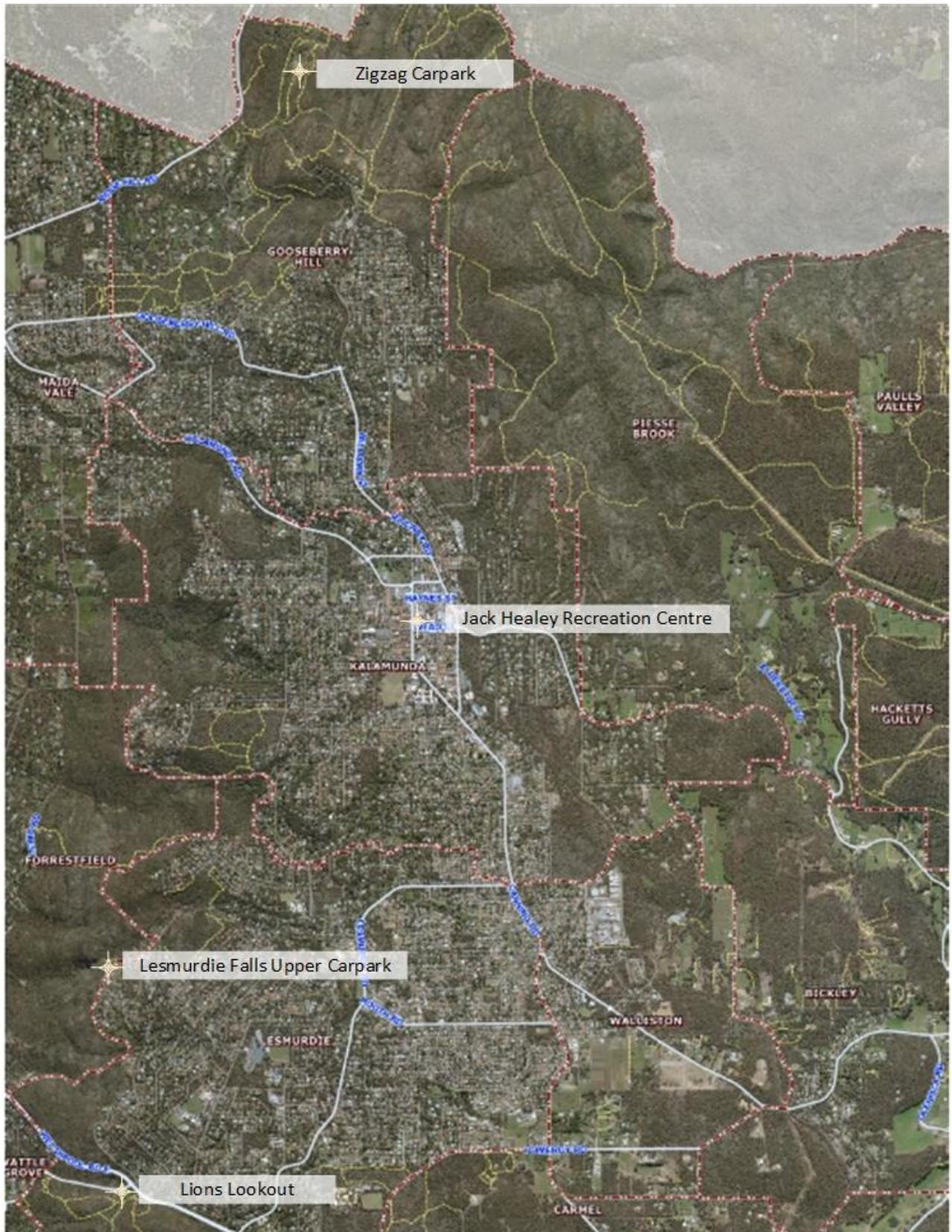
Establishes the purpose, principles and requirements for the installation, management and maintenance of CCTV systems owned and operated by the City of Kalamunda.

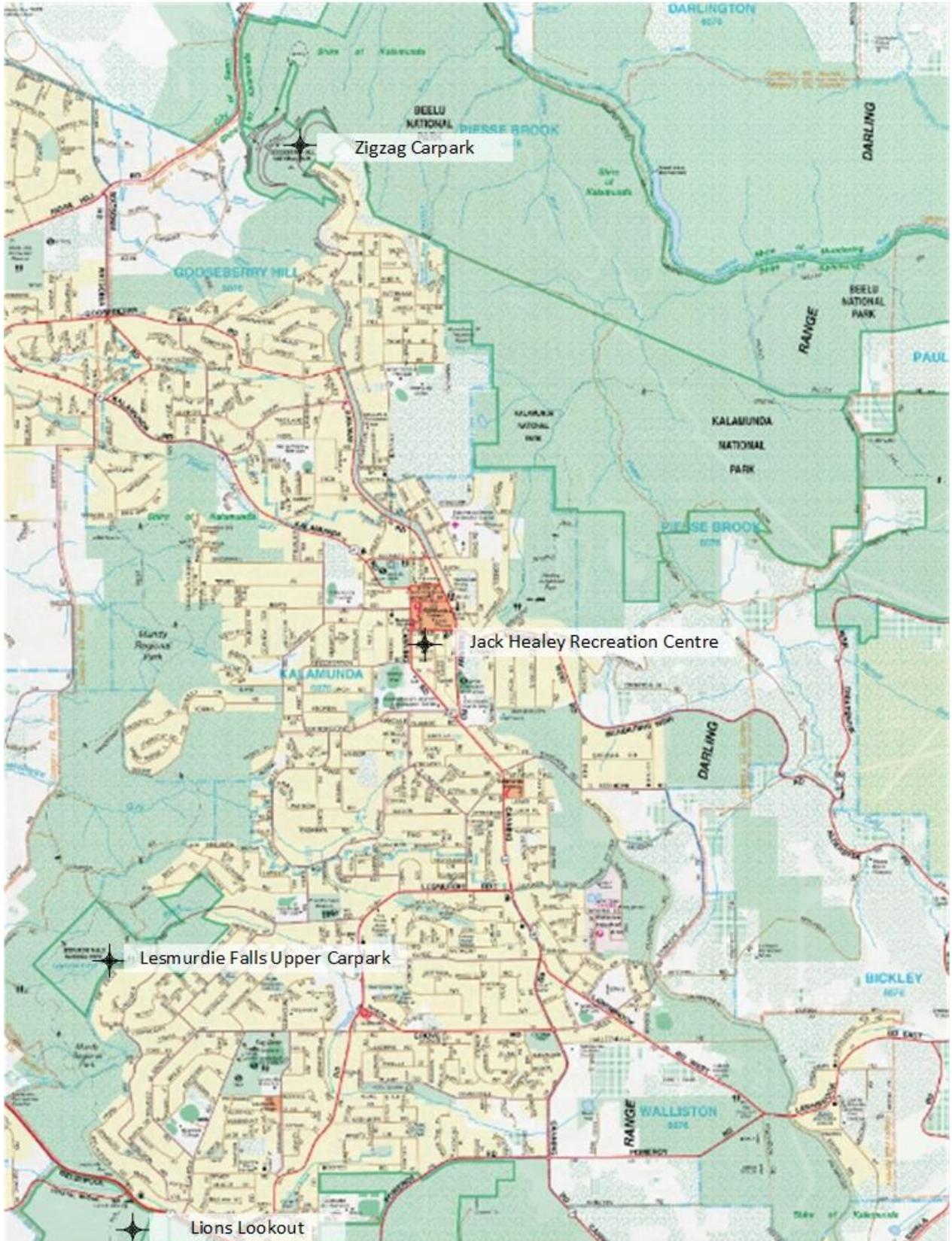


Executive Review Version 1.6

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GLOSSARY

ADSL	Asymmetric digital subscriber line
ANZPAA	Australian New Zealand Police Advisory Association
AS	Australian Standards
ASIAL	Australian Security Industry Association Limited
CCTV	Closed Circuit Television
CD	Compact Disk
CPTED	Crime Prevention Through Environmental Design
CSCPP	Community Safety & Crime Prevention Plan
DVD	Digital Video Disk
EWP	Elevated Work Platform
FOI	Freedom of Information
FTE	Full Time Equivalent
GIS	Geographic Information System

ICT	Information Communications Technology
IMS	Incident Management System
IT	Information Technology
MOU	Memorandum of Understanding
NVR	Network Video Recorder
OSH	Occupational Safety & Health
PC	Personal Computer
POS	Public Open Space
RF	Radio Frequency
VMS	Video Management System
VSS	Video Surveillance System
WA	Western Australia
WALGA	Western Australia Local Government Association

DEFINED TERMS

“Authorised Personnel” means any delegated officer of the City of Kalamunda Chief Executive Officer and WA Police Officer who has signed the City of Kalamunda CCTV Code of Conduct annexed to this CCTV Strategy as Annexure H.

“CCTV Objectives” means the CCTV objectives set out in the CCTV Policy.

“CCTV Operations” means all aspects of public space CCTV surveillance management, use, recording, maintenance and access to Recorded Material.

“CCTV Policy” means the City of Kalamunda CCTV Policy annexed to this CCTV Strategy as Annexure A.

“Guiding Principles” means the CCTV guiding principles set out in the CCTV Policy.

“Recorded Material” is any recording of video, images or audio, original or copy, by the City of Kalamunda CCTV system.

“WA Police Force MOU” means the Memorandum of Understanding made between the Minister for Police and the City of Kalamunda dated 10 May 2016.

CCTV STRATEGY

INTRODUCTION

Community safety is Priority 1 within the City of Kalamunda Strategic Community Plan 2027 and the Community Safety and Crime Prevention Framework supports the use of CCTV. The CCTV Strategy has been developed to align existing and new CCTV systems to relevant strategic plans, including:

1. Community Safety and Crime Prevention Plan (2013–2018) & (2019–2024)
2. Kalamunda Asset Management Strategy 2017 - 2021
3. Community Engagement Strategy
4. Public Open Space (POS) Strategy 2018
5. Smart Cities - Digital Strategy
6. ICT Strategy

The City of Kalamunda installs CCTV systems as a tool to improve community confidence that an area is safe and to support the usage of City facilities. The City of Kalamunda CCTV Strategy sets out to capture existing technical and functional requirements to ensure CCTV is applied consistently within the City's Strategic Planning Framework. To achieve this, the strategy focuses on three key areas; Operations, Expanding and Funding the CCTV Network, as shown in Figure 1.

WHERE WE ARE NOW

The City of Kalamunda operates 100 cameras for community safety in public spaces and on buildings for the protection of City owned assets. Federal and State Government funding continues to be made available and CCTV installations continue to be rolled out. The City of Kalamunda will consolidate the existing network and verify camera requirements to manage the network expansion and control costs.

Current daily use extends to local police using CCTV for review and investigation purposes, however with greater insight, City operations will benefit further in support of ranger services, tackling illegal dumping and emergency detection, monitoring and management.



Figure 1: CCTV Strategy Focus

STRATEGY 1 - OPERATIONS

Strategy 1 - Operations establishes the important day to day roles and responsibilities, allocation of resources, managing cost and measuring performance.

MINIMISING OPERATIONAL COSTS

The City of Kalamunda seeks to ensure CCTV Operations and expansion follows defined assessment criteria and is deployed according to an established technical design that limits operational cost.

The largest ongoing cost in operating CCTV relates to staff time and technical system maintenance. Authorised Personnel are required to liaise with police and the public, review and/or download Recorded Material, conduct and keep up to date records and conduct or receive training on the CCTV system.

Expansion of CCTV systems and change in operations (e.g. inclusion of remote monitoring) may require additional technical staff, which will present ongoing operational costs and if not controlled, could present a risk to the overall system's viability and effectiveness.

The City of Kalamunda acknowledges the risk of rising operational costs and has sought to mitigate a large portion of these costs through the installation of a City owned PC and ADSL link at the Forrestfield Police Station. This aims to reduce the cost of retrieving Recorded Material for police purposes and provides a more effective use of the present public CCTV network with passive camera monitoring by police, thereby providing better system value for City' residents.

WHERE WE WANT TO BE: ACHIEVING EFFECTIVE CCTV DESIGN & PRACTICES

The City's current CCTV system operates on the Avigilon and Indigo video management systems with approximately 100 CCTV cameras, approximately 12 network video recorders and four LCD monitors installed at the Forrestfield Police Station for live monitoring.

The City of Kalamunda CCTV system and longer-term (5+ years) network design needs to be fully established and documented to ensure system expansion progresses according to the Smart Cities Digital Strategy and ICT Strategy requirements.

To capture and achieve greater awareness of existing CCTV assets, the following is required:

1. Maintenance contract for existing CCTV systems to be established and commence with an audit of City CCTV cameras to establish current functional requirements and registration to the existing City CCTV Assets. Existing maintenance contract exists until 2022 for cameras installed by Downer EDI.
2. Based on audit findings, the City will verify CCTV camera operational and functional requirements, including:
 - a. Register on the Asset Management System (MyData) and GIS/Intramaps, including associated poles and electrical cables;
 - b. Establish functional and maintenance requirements, provided at Annexure F, for each camera;
 - c. Verify system maintenance is scheduled and preventative, with reference to Annexure E.
3. Existing and proposed public space CCTV camera locations are to be evaluated according to consistent criteria, provided at Annexure G and camera location maps maintained;

4. All CCTV cameras will be operated in accordance with the approved CCTV Policy and Management (Standard Operating) Procedures, provided at Annexure A and Annexure E, respectively.
5. All public space and semi-public space CCTV cameras will be supported with CCTV signage. Signage will be designed and mounted in compliance with Australian Standards AS4306.

CCTV MANAGEMENT & COMPLIANCE OVERSIGHT

The Manager Community Safety Services is appointed as the Authorised CCTV Manager and custodian of the CCTV Strategy.

Business Units and roles with CCTV management or operational responsibilities include:

- Manager Community Safety Services, Community Safety Services
- Manager Information Technology, ICT
- Coordinator Information Technology, ICT
- Senior Business Analyst (IT), Corporate Services
- Recreation Facilities Team Leader
- Officer in Charge, Forrestfield Police Station, WA Police Force

CCTV management is subject to documented CCTV Policy (Annexure A), recognises the existing City of Kalamunda's Policy Framework (Annexure B), Legislation and Standards Framework (Annexure C) and existing Strategic Planning Framework (Annexure D).

Daily CCTV Operations will be managed according to Management (Standard Operating) Procedures (Annexure E), with established functional requirements (Annexure F), evaluation criteria (Annexure G) and controlled by a code of conduct (Annexure H) and with access to Recorded Material to be applied for and approved (Annexure I).

RESOURCES

The estimated number of hours expended per week is equivalent to 0.25 FTE (10 hours per week/40 hours per month) with primary duties involving checking camera image quality, responding to police requests for Recorded Material and establishing compliance or contracting requirements.

A strategic objective is to maintain and preferably reduce existing FTE hours, with outsourced technical maintenance and auditing and the VMS to be configured to provide automated reporting for measuring CCTV performance. Managing operating costs are to not increase or have limited incremental increase FTE time based as an existing ratio of network expansion, currently 1:10 (1 hour per week per 10 cameras).

Allocated FTE resources should be focused on a Crime Prevention role, with CCTV forming part of the crime prevention toolset. CPTED Audits should be considered as part of the CCTV strategy but more reasonably integrated into the Community Safety Strategy and POS Strategy. This role will also involve the development of grant funding applications.

The Forrestfield Police Station and WA Police Force should be recognised as an important resource and 'should' be performing a majority of the day to day operations, including daily camera checks, urgent maintenance requests, image requests/downloads and compliance to automated system reporting requirements.

MEASURING CCTV PERFORMANCE

The City of Kalamunda CCTV system is established with the following goals:

1. Increase community perception of safety and deter crime;
2. Provide an effective tool to investigate and respond to crime;
3. Support security systems that monitor and protect City owned assets;
4. Apply surveillance technology effectively and responsibly;
5. Maintain effective control of system integrity, reliability and efficacy, and
6. Consult and coordinate with stakeholders.

The objectives established for CCTV installations are therefore based on five (5) measurable criteria to be reviewed annually for CCTV management reporting purposes:

1. Improving perceptions of safety measured through community consultation. Community surveys to be reviewed for perceptions of community safety and measured as a performance indicator;
2. Reducing reported crime in the target area;
3. Number of police requests for Recorded Material verses Recorded Material provided, including a per camera breakdown to determine each camera's contribution. Changes in the number of requests for each camera should be reviewed for an indication in overall system effectiveness and contribution each camera is making in reducing or responding to incidents. Changes should be reviewed with Item 4;
4. Change in annual operating costs in ratio to the number of cameras and number of image downloads, as per Item 3; and
5. Number of complaints received concerning the CCTV system or its operation. The target for the number of complaints is zero;

Broader community and CCTV effectiveness objectives and performance indicators may include:

1. Number of private CCTV systems within the City of Kalamunda, registered with WA Police Force as part of Blue Iris and the State CCTV Strategy; and
2. Number of private CCTV systems contributing to WA Police Force requests for Recorded Material.

STRATEGY 1 – OPERATIONS: ACTION ITEMS

Strategy 1 – Operations Action Items	Risk*
1. CCTV maintenance regime is contracted (Tender Reference)	High
a. Maintenance reviewed annually	Medium
b. Transition existing maintenance contract for newly installed infrastructure to be whole of system preventative maintenance regime.	Medium
2. CCTV assets to be adopted as part of the Asset Management System with System Maintenance Contractor to capture functional specifications and requirements.	High
3. Maintenance program to determine cameras and equipment for replacement, renewal or upgrade.	Medium
4. CCTV incorporated into Community Surveys. Community surveys to be reviewed for perceptions of community safety and measured as a performance indicator.	Medium
5. Appointment of an Authorised CCTV Manager to be approved.	Medium
6. CCTV Policy to be approved and posted on website.	Low
7. Authorised personnel with access to CCTV equipment to abide by the terms of the Code of Conduct.	Medium
8. City of Kalamunda Complaints procedure to be applied to the CCTV Strategy.	Medium
9. Approval of Management (Standard Operating) Procedures with the following requirements:	Medium
a. Recorded Material will be retained for a minimum of thirty-one (31) days.	Medium
b. CCTV Signage erected.	Medium
c. Police retrieval of Recorded Material is documented.	High
d. Police use of Recorded Material for criminal investigation is documented.	Low
e. Police use of Recorded Material in interview or court proceedings is documented.	Medium
f. CCTV system is to report on the number of requests/applications for Recorded Material.	Medium
g. Image loss or tamper alarms are to be activated for all cameras.	Medium
h. CCTV systems integrated into business continuity management plan and disaster recovery plans.	Medium
i. Independent CCTV Operations audit at least every three years.	Low

*Aligned to the City of Kalamunda Risk Matrix

STRATEGY 2 - EXPANDING

Strategy 2 sets out how the City of Kalamunda will achieve CCTV system requirements and expand the CCTV network into the future.

WHERE AND WHY CCTV SHOULD BE USED

Prior to the installation of any camera within public open space, in accordance with the City of Kalamunda POS and Community Safety and Crime Prevention Strategy, a CPTED assessment will be conducted of the area.

CCTV cameras may be installed as a tool alongside a wider crime prevention approach or building security system. The CPTED Assessment should consider, as a minimum, the following:

1. Area lighting, signage and street infrastructure;
2. Lines of Sight, for area users and camera fields of view;
3. Activity Mix and Social interaction;
4. Type of crime or issue occurring and root cause;
5. Likely impact of CCTV on reducing crime or improving perceptions of safety;
6. Technical viability and estimated cost of installation; and
7. Benefit and degree of integration to the overall CCTV system network or area coverage.

EXPANDING THE CCTV NETWORK

CCTV surveillance is acknowledged as a valuable and effective tool for the protection of people and property. CCTV plays an active deterrence role to reduce and manage anti-social behaviour, drug and alcohol related crime, offences against persons and property and as a powerful investigative tool for local Police. Alongside crime deterrence, the public CCTV system improves the perception of community safety and property protection.

CCTV locations are mapped, as shown in Figures 2 and 3, alongside other public and private CCTV systems and with City infrastructure and assets. Where a determination is reached to extend the CCTV system or camera coverage, the City of Kalamunda will take the following actions, as demonstrated in Figure 4:

1. At the outset, the project will verify the primary aims in accordance with the CCTV Strategy.
 - a. Complete a formal assessment, provided at Annexure G, of the proposed CCTV location(s) with mandatory criteria to be assessed, including;
 - b. Location CPTED Assessment conducted;
 - c. Using CCTV in the location as a treatment aligns within the City of Kalamunda strategic planning and crime prevention framework;
 - d. It is technically and financially viable to install and operate a CCTV camera(s) at this location.

2. The City of Kalamunda will develop the functional requirements and risk assessment for each new camera.

Functional requirements, provided at Annexure F, will define the objectives of the camera (identification, recognition, detection), fields of view to be achieved and relevant technical configurations required for integration to the existing CCTV system.

3. For public open space cameras, consultation shall be undertaken amongst the local community.

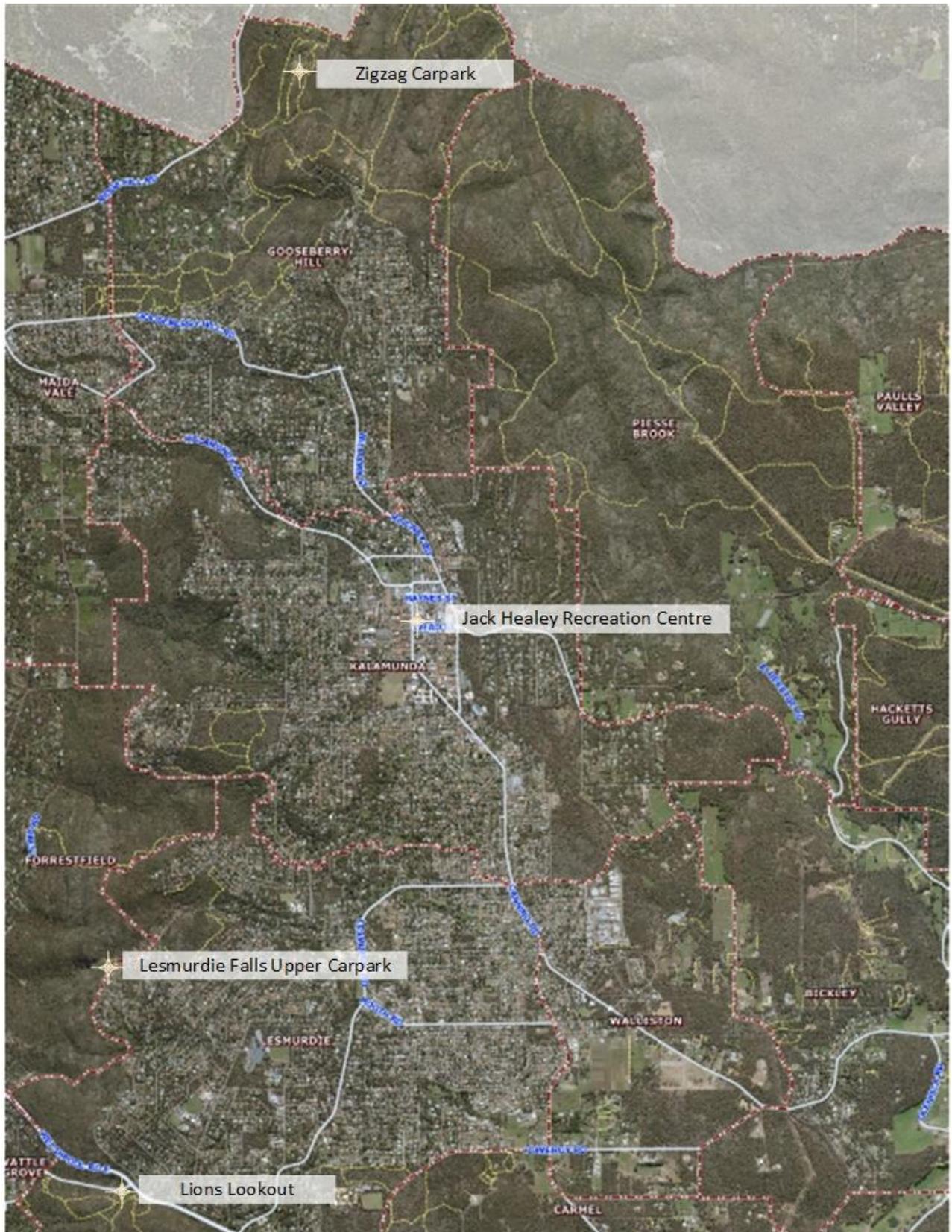


Figure 2: Kalamunda Regional Crime Hotspot Reduction Project: CCTV towers installed at Lions Lookout, Falls Road, Zig Zag car park and Jack Healey Centre

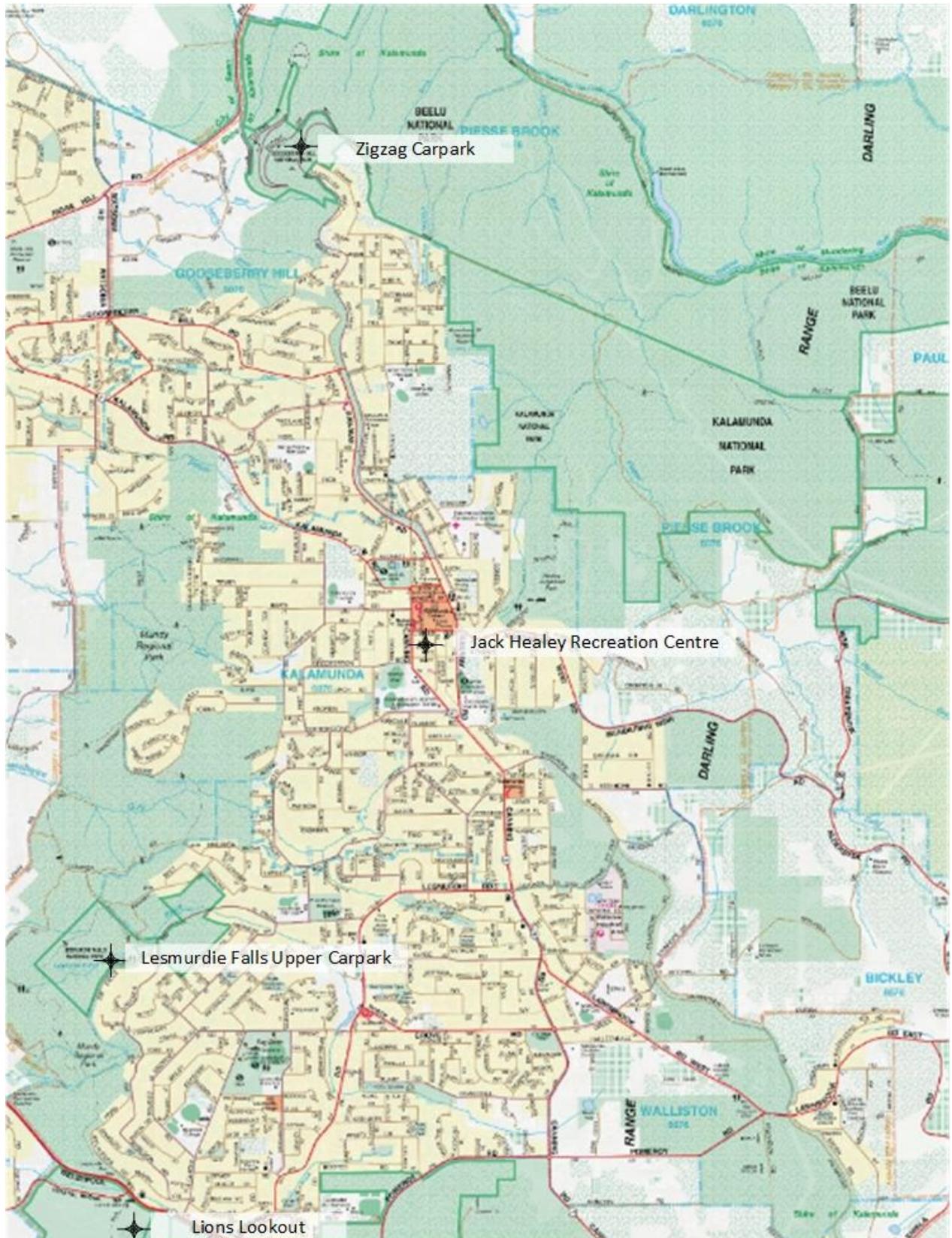


Figure 3: Kalamunda Regional Crime Hotspot Reduction Project: CCTV towers installed at Lions Lookout, Falls Road, Zig Zag car park and Jack Healey Centre

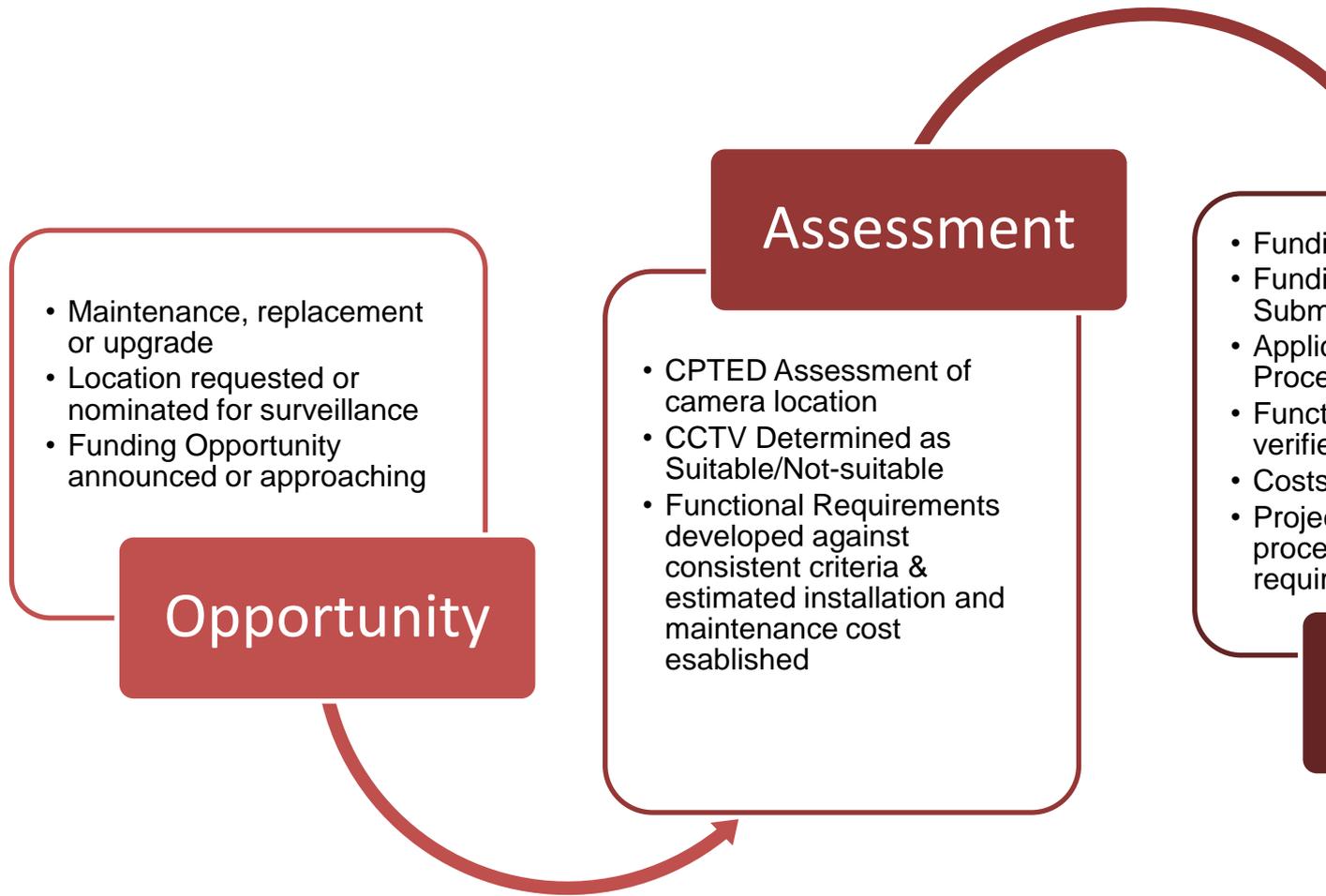
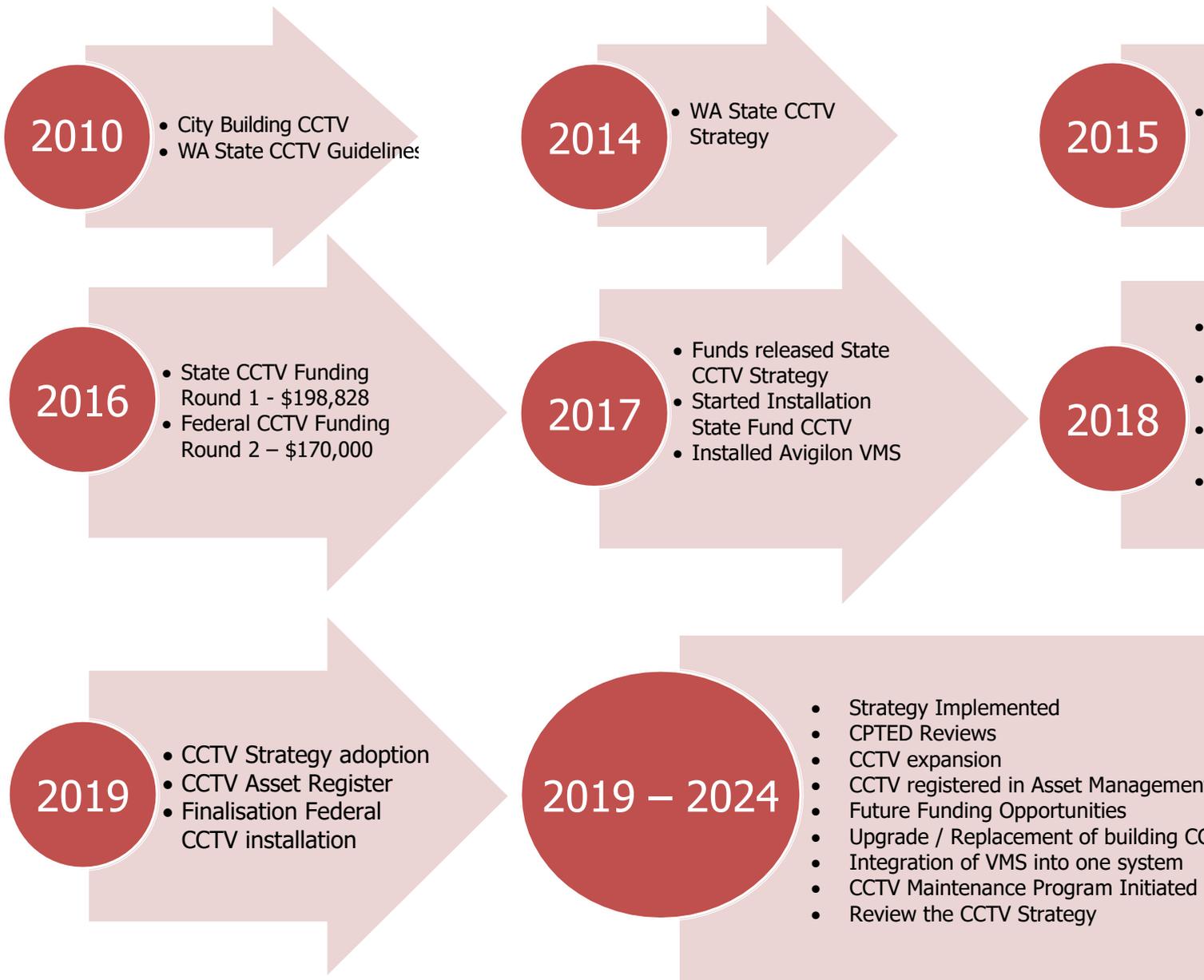


Figure 4: CCTV Assessment & Evaluation Process



STRATEGY 2 – EXPANDING: ACTION ITEMS

Strategy 2 - Action Items	Risk*
1. CCTV to be included in priority improvement and implementation items for improving Public Open Space.	Low
2. Develop the Community Safety and Crime Prevention Plan 2019-2024 (CSCPP) and deliver the 2018 CSCPP initiatives. CCTV systems are to be acknowledged and considered as part of this strategy, including;	Medium
a. Conduct CPTED Reviews and CCTV Evaluation Assessments for all proposed camera locations;	Medium
i. Review and enhance CCTV, lighting and other infrastructure to assist in surveillance of key community facilities/areas or those readily subject to anti-social or criminal behaviour;	Medium
ii. Undertake local community safety action planning based on determination of priority locations;	Low
iii. CCTV installations are supported with functional requirements and risk assessments;	Medium
iv. CCTV cameras are installed at fixed locations, based on known crime statistics identified by the Western Australian Police Force and a CPTED assessment for each location;	Medium
v. Number of contributions each CCTV camera makes to police in the form of image downloads; and	Low
vi. CCTV locations are mapped.	Low
b. CCTV improves perceptions of safety through community consultation.	Low
c. CCTV Reduces Reported Crime in the target area.	Medium
3. ICT system integration and network planning should establish the following:	
a. CCTV system complies to the ICT Policy and ICT Strategic Plan;	High
i. Technical Design to integrate new technology (analytics) to improve operation efficacy; and	Medium
b. CCTV system complies with the Smart City – Digital Strategy.	Medium

*Aligned to the City of Kalamunda Risk Matrix

STRATEGY 3 - FUNDING

Strategy 3 establishes the funding arrangements for the CCTV Network and system expansion.

FUNDING THE CCTV NETWORK

The City of Kalamunda will continue to monitor and apply for grant funding, as shown in Table 1, as it becomes available and will proactively plan forward to ensure system design and quality is maximised.

City of Kalamunda CCTV systems installation and operational costs should reflect the value provided to the community.

CCTV system design, camera type and site selection will be directly influenced by the funding framework and risk of excessive installation and maintenance costs is to be minimised.

The funding framework for new installations and ongoing management includes;

- a. New Installations
 - i. City of Kalamunda Annual Budget – Renewal Budget (Replacement and Upgrades)
 - ii. Safer Communities Grants - Federal Government
 - iii. State CCTV Strategy or Safer Streets Grants – WA State Government
- b. Operating & Maintenance Expenses
 - i. City of Kalamunda Annual Budget

Table 1: Register of CCTV Funding Applications and Awards

Year	Grant Name	Description	Amount
2018	Federal Safer Communities Fund	Installations at Hartfield Park, Dawson Bershire Roundabout & Shopping Centre, BP Service Station, Welshpool Road, Lower Carpark Lesmurdie Falls	\$300,000
2016	Federal Safer Communities Fund	Kalamunda Regional Crime Hotspot Reduction Project: Install four CCTV towers for Lions Lookout, Falls Road, Zig Zag car park and Jack Healey Centre	\$170,000
2015	State CCTV Strategy Infrastructure Fund	Community Crime & Safety CCTV Project	\$198,828

GRANT FUNDING CRITERIA REQUIREMENTS

The grants administration framework may require funded projects to meet Federal and State Government policy objectives, achieve value for relevant money and for recipients to demonstrate a capacity, capability and the resources to undertake the project. These requirements may be assessed against nominated merit criteria using equal weighting.

Previous grant criterion, proposed in the Program Guidelines Safer Communities Fund – Round 1 December 2016 include:

MERIT CRITERION 1

How will the project contribute to improve community safety?

- a. Project description including detail about the equipment being installed.
- b. Describe how the project will meet community safety objectives.

MERIT CRITERION 2

The value for money offered by the project:

- a. Provide a budget for the project including equipment and installation costs.
- b. Provide a quote to show the costs of equipment and installation.

MERIT CRITERION 3

The capacity, capability and resources to carry out the project:

- a. Describe the plan for carrying out the project.
- b. Describe how the equipment will be maintained.

STRATEGY 3 – FUNDING: ACTION ITEMS

Strategy 3 - Action Items	Risk*
1. CCTV to be included as part of seeking internal and/or external funding assistance to assist in enabling the implementation of community safety and crime prevention initiatives.	Medium
a. Prepare and cost plans for new installations.	Medium
b. Prepare and cost for camera and equipment replacement, renewal or upgrade	Medium
2. CCTV systems to be acknowledged and considered as part of the Digital Strategy to attract funding through the Smart Cities Program.	Medium
3. Implement the 2018/2019 initiatives in the Information Communication Technology Strategy. CCTV Network applies to ICT. Budget Operating & Maintenance Expenses.	Medium
a. Technical Design to minimise operational and maintenance expenses.	High

**Aligned to the City of Kalamunda Risk Matrix*

CCTV STRATEGY - ACTION IMPLEMENTATION PLAN

STRATEGY 1: OPERATIONS							
Kalamunda Achieving Corporate Business Plan July, 2018 to June 2022							
Deliver initiatives contained within the community engagement strategy. Consult and survey the community on public space CCTV installations.							
Kalamunda Asset Management Strategy to 2017 - 2021							
CCTV to be recognised as part of the Asset Register Data.							
CCTV to be incorporated into Asset Management Plans, Buildings Asset Management Plans and Pathways and Parks Asset Management Plans.							
City of Kalamunda Community Engagement Strategy 2017							
On-line comment: CCTV to be included for online comment.							
Surveys: CCTV to be included in community safety surveys. Is CCTV making people feel safer?							
Advisory/Management Committees: CCTV to be included on Community Safety Committee agenda.							
No.	Operational Initiative	Measurements	Lead Unit	Expected Work Undertaken			
				18/19	19/20	20/21	21/22
1.1	CCTV maintenance regime is contracted (Tender Reference)	Maintenance Performance Indicators	Community Safety Asset Services	✓			✓
1.1.a	Maintenance annually reviewed	Maintenance Performance Indicators	Community Safety Asset Services	✓	✓	✓	✓
1.1.b	Transition the Existing 5-year maintenance contract aligned on conclusion to a whole of system preventative maintenance regime using a competitive tender process.	Maintenance Performance Indicators	Community Safety Asset Services			✓	✓
1.2	CCTV assets to be adopted as part of the Asset Management System with System Maintenance Contractor to capture functional specifications and requirements.	Maintenance Performance Indicators	Community Safety Asset Services	✓	✓	✓	✓
1.3	Maintenance program to determine cameras and equipment for replacement, renewal or upgrade	Maintenance Performance Indicators	Community Safety Asset Services	✓	✓	✓	✓

No.	Operational Initiative	Measurements	Lead Unit	Expected Work Undertaken			
				18/19	19/20	20/21	21/22
1.4	CCTV incorporated into Community Surveys. Community surveys to be reviewed for perceptions of community safety and measured as a performance indicator.	Verification of Catalyst Community Surveys	Community Safety	✓	✓	✓	✓
1.5	Appointment of an Authorised CCTV Manager	Appointment Approved	Director of Development Services	✓			
1.6	CCTV Policy approved and posted on website	Verification of website post	Community Safety	✓			
1.7	Authorised personnel with access to CCTV equipment are to abide by the terms of the Code of Conduct	Number of Signed Agreements	Community Safety	✓	✓	✓	✓
1.8	City of Kalamunda complaints procedure is applied to the CCTV Strategy	Number of complaints	Community Safety	✓	✓	✓	✓
1.9	Approval of Management (Standard Operating) Procedures	Procedures Approved	Director of Development Services	✓	✓	✓	✓
1.9.a	Recorded Material will be retained for a minimum of thirty-one (31) days	Retention Verified	Community Safety	✓	✓	✓	✓
1.9.b	CCTV Signage erected	Number of signs	Community Safety	✓	✓	✓	✓
1.9.c	Police retrieval of Recorded Material is documented	Procedures Approved	WA Police Force Community Safety	✓	✓	✓	✓
1.9.d	Police use of Recorded Material for criminal investigation is documented	Procedures Approved	WA Police Force Community Safety	✓	✓	✓	✓
1.9.e	Police use of Recorded Material in interview or court proceedings is documented	Procedures Approved	WA Police Force Community Safety	✓	✓	✓	✓
1.9.f	Reporting on CCTV system is to include the number of requests/applications for Recorded Material.	Number of requests/applications for Recorded Material	WA Police Force Community Safety	✓	✓	✓	✓
1.9.g	Image loss or tamper alarms are to be activated for all cameras.	Number of camera image losses and duration	WA Police Force Community Safety	✓	✓	✓	✓

No.	Operational Initiative	Measurements	Lead Unit	Expected Work Undertaken			
				18/19	19/20	20/21	21/22
1.9.h	CCTV integrated into business continuity management plan and disaster recovery plans	Integration Verified	Community Safety	✓	✓	✓	✓
1.9.i	Independent CCTV Operation Audit, within a minimum of 3 years.	Audit Conducted & Reviewed	Community Safety	✓			✓
STRATEGY 2: EXPANDING							
Public Open Space Strategy 2018							
CCTV related Actions to be identified and adopted							
CCTV to be included in priority improvement and implementation items for improving POS							
Kalamunda Achieving Corporate Business Plan July, 2018 to June 2022							
Develop the Community Safety and Crime Prevention Plan (2019-2024) and deliver the 2018 CSCPP initiatives. CCTV systems to be acknowledged and considered as part of this strategy.							
Develop and implement a Digital Strategy to attract funding through the Smart Cities Program. CCTV systems to be acknowledged and considered as part of this strategy.							
Implement the 2018/2019 initiatives in the Information Communication Technology Strategy. CCTV Network applies to ICT.							
Community Safety and Crime Prevention Plan 2013-2018							
Review and enhance CCTV, lighting and other infrastructure to assist in surveillance of key community facilities/areas or those readily subject to anti-social or criminal behaviour.							
Undertake local community safety action planning based on determination of priority locations. CCTV to be considered.							
2.1	CCTV to be included in priority improvement and implementation items for improving Public Open Space.	POS Strategy acknowledges CCTV Strategy	Strategic Planning	✓	✓	✓	✓
2.2	Develop the Community Safety and Crime Prevention Plan 2019-2024 (CSCPP) and deliver the 2018 CSCPP initiatives. CCTV systems are to be acknowledged and considered as part of this strategy, including;	CSCPP acknowledges CCTV Strategy	Community Safety Asset Services	✓	✓	✓	✓

No.	Operational Initiative	Measurements	Lead Unit	Expected Work Undertaken			
				18/19	19/20	20/21	21/22
2.2.a	Conduct CPTED Reviews and CCTV Evaluation Assessments for all proposed camera locations;	All CCTV locations have a CPTED review conducted before installation.	Community Safety	✓	✓	✓	✓
2.2.a.i	Review and enhance CCTV, lighting and other infrastructure to assist in surveillance of key community facilities/areas or those readily subject to anti-social or criminal behaviour	Number of areas identified	Community Safety	✓	✓	✓	✓
2.2.a.ii	Undertake local community safety action planning based on determination of priority locations;	Number of community safety action plans developed	Community Safety	✓	✓	✓	✓
2.a.ii.i	CCTV installations are supported with functional requirements and risk assessments;	Number of Functional Requirements established	Community Safety	✓	✓	✓	✓
2.2.a.iv	CCTV cameras are installed at fixed locations, based on known crime statistics identified by the WA Police Force and a CPTED assessment for each location;	Number of cameras installed	Community Safety WA Police Force	✓	✓	✓	✓
2.2.a.v	Number of contributions each CCTV camera makes to police in the form of image downloads; and	Number of image downloads	Community Safety WA Police Force	✓	✓	✓	✓
2.2.a.vi	CCTV locations are mapped.	Areas mapped	Community Safety WA Police Force	✓	✓	✓	✓
2.2.b	CCTV improves perceptions of safety through community consultation.	Community Safety perceptions	Community Safety	✓	✓	✓	✓
2.2.c	CCTV Reduces Reported Crime in the target area.	Reported Crime Statistics	Community Safety WA Police Force	✓	✓	✓	✓
2.3	ICT system integration and network planning should establish the following:						
2.3.a	CCTV system complies to the ICT Policy and ICT Strategic Plan;	Compliance verified	Community Safety ICT	✓	✓	✓	✓

No.	Operational Initiative	Measurements	Lead Unit	Expected Work Undertaken			
				18/19	19/20	20/21	21/22
2.3.a.i	Technical Design to integrate new technology (analytics) to improve operation efficacy; and	New technology adopted	Community Safety ICT	✓	✓	✓	✓
2.3.b	CCTV system complies with the Smart City – Digital Strategy.	Compliance verified	Community Safety ICT	✓	✓	✓	✓
STRATEGY 3: FUNDING							
Community Safety and Crime Prevention Plan 2013-2018							
Seek internal and/or external funding assistance to assist in enabling the implementation of community safety and crime prevention initiatives. CCTV to be included							
No.	Operational Initiative	Measurements	Lead Unit	Expected Work Undertaken			
				18/19	19/20	20/21	21/22
3.1	CCTV to be included as part of seeking internal and/or external funding assistance to assist in enabling the implementation of community safety and crime prevention initiatives.	Federal Government Safer Suburbs Grants State CCTV Strategy Grants	Safer Communities (Federal) Safer Streets (WA) WA Police Force	✓	✓	✓	✓
3.1.a	Prepare and cost plans for new Installations	Federal Government Safer Suburbs Grants State CCTV Strategy Grants	Safer Communities (Federal) Safer Streets (WA) WA Police Force	✓	✓	✓	✓
3.1.b	Prepare and cost for camera and equipment replacement, renewal or upgrade	City of Kalamunda Annual Budget	Community Safety ICT			✓	✓
3.2	CCTV systems to be acknowledged and considered as part of the Digital Strategy to attract funding through the Smart Cities Program	City of Kalamunda Annual Budget	ICT	✓	✓	✓	✓
3.3	Implement the 2018/2019 initiatives in the Information Communication Technology Strategy. CCTV Network applies to ICT. Budget Operating & Maintenance Expenses.	City of Kalamunda Annual Budget	Community Safety Asset Services	✓	✓	✓	✓
3.3.a	Technical Design to integrate new technology (analytics) to improve operation efficacy	Improvement in one or more objectives	Community Safety ICT	✓	✓	✓	✓

ANNEXURE A: CITY OF KALAMUNDA CCTV POLICY

TITLE	CCTV Policy		
POLICY NUMBER			
POLICY OWNER	Director of Development Services		
DATE ADOPTED		DATE REVIEWED	

OBJECTIVE:	This policy establishes the purpose, principles and requirements for the installation, management and maintenance of CCTV systems owned and operated by the City of Kalamunda.		
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RATIONALE

The City of Kalamunda is committed to a safe community and workplace.

CCTV surveillance is acknowledged as a valuable and effective tool for the protection of people and property. The City of Kalamunda owns and operates CCTV at various locations as part of security systems to protect City assets and in the public realm to create a safer community by contributing to the deterrence and response to crime.

CCTV OBJECTIVES AND GUIDING PRINCIPLES

To implement this policy, the City of Kalamunda has set the following primary objectives:

1. Contribute to community safety, asset protection and police response capability;
2. Contribute to perceptions of safety and making people feel safe and secure; and
3. Maintain ownership and responsible control of the CCTV system.

In achieving these objectives, the City's CCTV system will be operated in accordance with the following guiding principles:

1. CCTV is installed to contribute to the protection and safety of the City's assets, public spaces and community;
2. CCTV is part of a multi-faceted approach to crime prevention and community safety and installations are based on an evidence-based assessment of public open space or asset risk assessment;
3. The contribution and value of CCTV is acknowledged through Community and Stakeholder consultation; and
4. CCTV systems are maintained to a high operational standard and operated in compliance with all relevant legislation and functional requirements.

WA POLICE FORCE MEMORANDUM OF UNDERSTANDING

The City of Kalamunda is a donor to the State CCTV Strategy. The City of Kalamunda provides access to live Recorded Material of public space CCTV to the WA Police Force, under the terms of the WA Police Force MOU .

The City of Kalamunda may withdraw from the WA Police Force MOU in accordance with Clause 5 of the WA Police Force MOU .

CONTROL OF RECORDED MATERIAL

The City of Kalamunda manages Recorded Material according to Management (Standard Operating) Procedures.

Access to Recorded Material may be approved in the following circumstances:

1. Recorded Material is accessed by the WA Police Force in accordance with the WA Police Force MOU and following receipt of a signed application for Recorded Material (Annexure I);
2. Recorded Material is subject to a subpoena or lawful order by a court; and
3. following receipt of a Freedom of Information application, however, each application will be assessed on a case by case basis, in accordance with the *Freedom of Information Act 1992*.

Cross Reference (if any):

Management Practice No.		Delegation No.	
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Legal References:

Legislation:	Refer to CCTV Strategy – Annexure C
Local Law:	

Notes:	Refer to CCTV Strategy
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ANNEXURE B: CITY OF KALAMUNDA CCTV POLICY FRAMEWORK

In accordance with the Guiding Principles, the City of Kalamunda will manage and operate CCTV systems in accordance with an integrated policy framework, including;

Reference Number	Policy	CCTV Policy Relevance
C-ADM02	Complaint Handling Policy	CCTV management and operations will handle complaints in accordance with City policy.
C-AS-01	Asset Management Policy	CCTV assets should be managed in accordance within the City of Kalamunda's asset management framework.
C-AS-02	Street Tree and Streetscape Management Policy	CCTV is installed as part of the streetscape and fields of view are impacted by trees. Tree pruning schedules should consider camera and lighting requirements.
C-HR03	Occupational Safety and Health	CCTV installations and operations should be managed as part of the OSH management framework.
C-HR06	Risk Management	CCTV installations and operations should be managed as part of the risk management framework.
S-HR10	Social Media City Policy	CCTV Operations will use and respond to social media as part of its community engagement strategy.
C-IT01	Mobile Phone and Tablet Device – Provision, Usage and Disposal	CCTV systems may be accessible via mobile devices to improve efficient access and usage.
SM-IT03	IT Project Management	CCTV systems should be acknowledged, considered and integrated where possible as part of IT Projects.
SM-IT04	IT Security	CCTV systems and operation will comply with IT Security requirements.
SM-PRO1	Communication and Engagement City Management Procedure	CCTV installations and operations will adopt this procedure.
S-DS01	Enforcement	CCTV Operations will assist with enforcement activities where possible.
ADM23	Graffiti – Removal and Prevention	CCTV Operations will contribute to this policy in deterrence or detection.
COMR15	Public Awareness and Publicity	CCTV installations and operations will adopt this policy, including installation of CCTV signage.
COMR6	Community Policing	CCTV Operations will contribute to this policy in supporting local police capability.
FAC5	Clubhouses and Facilities on Reserves	CCTV installations and operations will contribute to the security of City facilities and deter crime.
Not Applicable	Public Code of Practice for Closed Circuit Television (CCTV) within the Shire of Kalamunda	This policy supersedes this Code of Practice

ANNEXURE C: LEGISLATION & STANDARDS FRAMEWORK

LEGISLATION FRAMEWORK

In accordance with the Guiding Principles, the City of Kalamunda will manage and operate CCTV systems in compliance with all relevant legislation, including;

- Local Government Act 1995;
- WA Surveillance Devices Act 1998;
- WA Security and Related Activities Act 1996.
- Records Management Act 2000;
- Freedom of Information Act 1992;
- Privacy Act 1988; and
- Criminal Investigation Act 2006.

STANDARDS AND GUIDELINES FRAMEWORK

In accordance with the Guiding Principles, the City of Kalamunda will manage and operate CCTV systems in compliance with all relevant standards and guidelines, including;

- WA State CCTV Strategy;
- Australia and New Zealand Police Recommendations for CCTV systems;
- State CCTV Strategy Infrastructure Fund Guidelines;
- Australian Standard AS4806 CCTV Parts 1 – 4;
- ISO 31000:2009 Risk Management;
- AS2201.1:2007 Security Installation;
- AS/ACIF S009:2008 – Cabling Provider Rules; and
- AS/NZS 1798:2007 – Lightning Protection.

ANNEXURE D: STRATEGIC PLANNING FRAMEWORK



Kalamunda Advancing: Strategic Community Plan to 2027	
Priority 1:	Kalamunda Cares and Interacts Outcome: To demonstrate improvement in safe and secure communities
Objective 1.2:	To provide safe and healthy environments for community to enjoy: The CCTV Strategy is directly linked to achieving this objective.
Strategy 1.2.1:	Facilitate a safe community environment: Measurement: Increasing community perception of safety in the City.
Kalamunda Achieving Corporate Business Plan July, 2018 to June 2022	
<i>Community Safety and Crime Prevention Plan (2013–2018)</i>	Develop the Community Safety and Crime Prevention Plan (2019-2024) and deliver the 2018 CSCPP initiatives. CCTV systems to be acknowledged and considered as part of this strategy.
<i>Smart Cities - Digital Strategy</i>	Develop and implement a Digital Strategy to attract funding through the Smart Cities Program. CCTV systems to be acknowledged and considered as part of this strategy.
<i>ICT Strategy</i>	Implement the 2018/2019 initiatives in the Information Communication Technology Strategy. CCTV Network applies to ICT.
<i>Community Engagement Strategy 2017</i>	Deliver initiatives contained within the community engagement strategy. Consult and survey the community on public space CCTV installations.
Public Open Space Strategy 2018	
Strategic Direction	Ensure Public Open Space (POS) is safe for all members of the community
	CCTV related Actions to be identified and adopted
	CCTV to be included in priority improvement and implementation items for improving POS

Community Safety and Crime Prevention Plan 2013-2018		
1.2	Guiding Principles:	Consultation with the community and agencies to develop solutions to local safety and crime issues will be on-going.
Strategy 1		Awareness and Understanding
Objective 1.1	Increase community awareness and understanding of community safety and crime prevention in the Shire of Kalamunda.	
	A.1	Enhance and promote community safety and crime prevention information on the Shire website. Include CCTV awareness.
	A.4	Raise awareness of community safety and level of service provided to community. Include CCTV awareness.
Strategy 2		Programs and Partnerships
Objective 2.2	Maintain effective working relationships with State Government, key organisations and community groups to plan and implement community safety and crime prevention initiatives.	
	B.5	Seek internal and/or external funding assistance to assist in enabling the implementation of community safety and crime prevention initiatives. CCTV to be included for funding programs.
Strategy 3		Physical Environment
Objective 3.0	Contribute to and promote a safe physical environment	
	C.2	Review and enhance CCTV, lighting and other infrastructure to assist in surveillance of key community facilities/areas or those readily subject to anti-social or criminal behaviour.
Strategy 5		Targeted Precinct Planning
Objective 5.1	To utilise local knowledge and solutions to improve community safety	
	E.4	Undertake local community safety action planning based on determination of priority locations. CCTV to be considered.
Kalamunda Asset Management Strategy to 2017 - 2021		
Priority Action	Define levels of service for all asset classes	
	CCTV to be recognised as part of the Asset Register Data	
Priority Action	Manage performance of assets in respect of their levels of service through a well-defined set of indicators and targets	
	CCTV to be incorporated into Asset Management Plans, Buildings Asset Management Plans and Pathways and Parks Asset Management Plans	
City of Kalamunda Community Engagement Strategy 2017		
Engagement Level 2:	Consult	The City will ensure the community is consulted on issues which impact them directly or are of concern to the community or to any group within the community in a timely manner.
Consulting Strategy 2.2		On-line comment: CCTV to be included for online comment.
Consulting Strategy 2.3		Surveys: CCTV to be including in community safety surveys. Is CCTV making people feel safer?
Collaborating Strategy 4.0		Advisory/Management Committees: CCTV to be included on Community Safety Committee agenda.

ANNEXURE E: MANAGEMENT (STANDARD OPERATING) PROCESURES

CCTV MANAGEMENT

STANDARD OPERATING PROCEDURES

The Manager Community Safety Services is appointed as the Authorised CCTV Manager and custodian of the CCTV Strategy.

Business Units and roles with CCTV management or operational responsibilities include:

- Manager Community Safety Services, Community Safety Services
- Manager Information Technology, ICT
- Coordinator Information Technology, ICT
- Senior Business Analyst (IT), Corporate Services
- Recreation Facilities Team Leader
- Officer in Charge, Forrestfield Police Station, WA Police Force

ROLES AND RESPONSIBILITIES

The role and duties of the Authorised CCTV Manager include:

- a) Manage the implementation of the CCTV Strategy and allocate tasks and functions to Authorised Personnel, assuming responsibility for ensuring these are efficiently performed in a manner consistent with the CCTV Objectives.
- b) Prepare budget estimates and funding applications and ensure the cost effectiveness of operations by regularly reviewing expenditure and asset depreciation. Includes maintaining the Asset Register, GIS/Intramaps of camera and equipment locations and system valuations.
- c) Act upon any delegated authority to ensure compliance to the CCTV Policy.
- d) Make determinations on the need for CCTV system modifications, including replacement and upgrades or procedural improvements, where appropriate.
- e) Allocate and modify, when necessary, surveillance or monitoring schedules in respect to identifying police intelligence, "hot spots" and peak crime times, implementing effective strategies to support CCTV Operations in reducing crime and anti-social behaviour in these and other areas.
- f) Regularly liaise with the WA Police Force and Forrestfield Police Station in respect to recorded material, submissions for Recorded Material, crime statistics, general trouble spots and other relevant matters to ensure the activities of the CCTV Operations complement Police priorities.
- g) Liaise with business and community group representatives to ensure their security needs are addressed and catered for whenever possible.
- h) Take an active part in improving the effectiveness of the Community Safety and Crime Prevention Planning in terms of applying the CCTV Strategy.
- i) Keep abreast of CCTV technology, practices and all introduced amendments to related legislation and where necessary introduce changes to maintain operational and legislative compliance.
- j) Assume responsibility for CCTV management reporting and monitor incident reports for correct completion in respect to names, addresses, vehicle descriptions if applicable etc. and that the evidence obtained in respect to each is of a sufficient quality to support prosecutions in the event of contested matters.
- k) Act on delegated authority in conjunction with the release and destruction of Recorded Material after assessing the evidence available and the circumstances of the matter.
- l) Assume responsibility for ensuring compliance with the CCTV Code of Conduct.

- m) Act on delegated authority to approve access to CCTV equipment when considered appropriate or necessary.
- n) Ensure CCTV related complaints, correspondence and reports are effectively investigated, prepared and completed within required time frames.
- o) Ensure that Authorised Personnel perform at a high level through the development, training and management of CCTV systems.
- p) Represent and promote the CCTV Strategy and the interests of the City of Kalamunda when required to attend various meetings, public forums or as a member of an advisory group.
- q) Foster a high standard of public relations in support of the CCTV Strategy.
- r) Authorise the use of hidden cameras which may be used for specified or defined operational purposes only, subject to an approved operational plan (e.g. for illegal dumping).

AUTHORISED ACCESS AND CONTROLS

Access to the CCTV system is restricted to authorised persons only and should be reviewed periodically. The details of all employees and / or police officers are to be recorded that has access to the CCTV systems, including the CCTV location that can be accessed and the reason for their access; and

The City requires all delegated officers of the City of Kalamunda Chief Executive Officer and any WA Police Officers with access to the CCTV systems to sign the City of Kalamunda CCTV Code of Conduct (Annexure H).

Training on the operation of CCTV systems should be provided to Authorised Personnel.

CCTV management procedures have been established to control access:

- a. The City of Kalamunda provides access to live video monitoring of public space CCTV to the WA Police Force at the Forrestfield Police Station, under the terms of the WA Police Force MOU.
- b. The City of Kalamunda may withdraw from the WA Police Force MOU in accordance with Clause 5 of the WA Police Force MOU.
- c. WA Police Force access to Recorded Material is governed by Schedule B of the WA Police Force MOU. Police access procedures are documented and independently auditable.
 - i. Police retrieval of Recorded Material is documented. Reports from system access logs are automated and independently auditable.
 - ii. Police use of Recorded Material for criminal investigation is documented and recorded as a key performance indicator.
 - iii. Police use of Recorded Material in interview or court proceedings is documented and recorded as a key performance indicator.

RECORDED MATERIAL

Access to any Recorded Material will be in accordance with the CCTV Policy and these Management (Standard Operating) Procedures.

Recorded Material will be retained for a minimum of thirty-one (31) days unless otherwise specified or required in relation to an approved police operation or the investigation of crime or events for court or formal review proceedings.

Recorded Material released to WA Police Force shall be subject to random audit, verified for accuracy, relevance and must not exceed that necessary to fulfil the purposes of the submitted request.

Recorded Material, hard copy or electronic will then be purged, erased, deleted or destroyed following receipt of written authorisation by the Authorised CCTV Manager, with released material destroyed following written confirmation on the original release request.

Reporting on CCTV systems is to include the number of requests/applications for Recorded Material.

System specifications for existing and new video management systems are to configure auditable reports, for Recorded Material retained, including camera number, commencement and conclusion time, time/date of recording, case number or reference and offence type.

SYSTEM MAINTENANCE

CCTV maintenance regime is contracted (*Tender Reference*) and reviewed for annually to measure system effectiveness and efficacy. Each quarter, maintenance is required to:

- a. Ensure all equipment is operational;
- b. Verify image quality of all cameras against the ANZPAA Checksheet;
- c. Clean camera lenses, domes and mounts;
- d. Ensure all cameras are securely mounted;
- e. Check, test and service system head-end including checking backups, archives, UPS and fail over configurations.
- f. Cleaning and check operation of adjacent luminaries;
- g. Reprogram light switch timers (if installed).
- h. Provide a documented Report and Service Log Completion (at head-end location).
- i. Structural integrity inspection of CCTV poles against damage and erosion.

CCTV SIGNAGE

CCTV signage should be considered to be a safety orientated sign and used for crime prevention purposes. The importance of effectively placing CCTV signage in the monitored area cannot be underestimated. Location, height and existing visual distractions are major factors which contribute to the effectiveness of a sign when installed.

CCTV signage will be erected at all formal or high traffic access points within the monitored area and at each camera location. Signs should be checked regularly for damage or theft.

As referred to in AS4806.1:2006, Part 11, signage at all CCTV system site entries (as a minimum) shall comply with the applicable Federal, State and Territory Privacy and Surveillance Legislation and shall comply with the requirements of AS2342. For other examples and the display of multiple hazards, also refer to AS2416-2002.

SAMPLE SIGNAGE
(To be designed)

It is important that CCTV signage be installed in positions which allow the best opportunity to capture the attention of pedestrians and thus improve safety and crime risk management, hence:

- Signs will be sited to inform the public that cameras are in operation and promote easy readability, including for those who may be influenced by drugs or alcohol.
- Signs will identify the City of Kalamunda as the owner of the CCTV system.

MEASURING AND MAINTAINING OPERATIONAL PERFORMANCE INDICATORS

CCTV faults are to be recorded and reviewed annually as a key performance indicator. The number and duration of camera faults and most accessed cameras for Recorded Material are to be identified.

The City will integrate the CCTV Strategy into the City of Kalamunda business continuity management plan and disaster recovery plans. Both plans will be periodically tested for effectiveness.

As a minimum, an independent CCTV Operations audit should be conducted at least within each three (3) years.

COMMUNITY ENGAGEMENT

In accordance with the City of Kalamunda Community Engagement Strategy the community will be engaged through introducing CCTV to community safety surveys. Community surveys will measure the following:

- a. The percentage of people responding to a Community Survey who indicate they feel safe in the city in the day and at night.
- b. The percentage of businesses, residents and visitors who are aware of public space CCTV.
- c. CCTV to be included amongst options to which the community feels contribute the most to feeling safe in the community.

PUBLIC INFORMATION

The City of Kalamunda will make the following documents public on the City's website, namely:

1. CCTV Policy
2. CCTV Code of Conduct.
3. Complaint procedures, or refer to the City of Kalamunda Complaint Procedure.

Public inquiries in relation to the City of Kalamunda CCTV Strategy must be made in writing to the Chief Executive Officer via enquiries@kalamunda.wa.gov.au.

CODE OF CONDUCT

The City of Kalamunda CCTV Code of Conduct applies to all delegated officers of the City of Kalamunda Chief Executive Officer and WA Police Officers with access to CCTV equipment and Recorded Material.

FREEDOM OF INFORMATION

A Freedom of Information (FOI) application may be made for access to Recorded Material and will be assessed on a case by case basis, in accordance with the *Freedom of Information Act 1992*.

Security cameras are often exempt from FOI and the City of Kalamunda installs CCTV for security and crime deterrence purposes.

Relevant links

https://www.oic.wa.gov.au/materials/Accessing_Docs.pdf

<https://www.maddocks.com.au/responding-requests-access-cctv-footage/>

COMPLAINTS

The City of Kalamunda complaints procedure is applied to the CCTV Strategy.

Complaints in relation to the City of Kalamunda CCTV Strategy or any part of the CCTV system must be made in writing to the Chief Executive Officer via enquiries@kalamunda.wa.gov.au.

MEDIA MANAGEMENT

Media inquiries in relation to the City of Kalamunda CCTV Strategy must be made in writing to the Chief Executive Officer via enquiries@kalamunda.wa.gov.au.

ANNEXURE F: CURRENT CCTV FUNCTIONS & MAINTENANCE

FUNCTION	CURRENT CCTV FUNCTIONAL & MAINTENANCE REQUIREMENTS
DESIGN	<p>CAMERA NUMBER:</p> <p>LOCATION:</p> <ol style="list-style-type: none"> 1. Field of View (FoV) purpose; <ol style="list-style-type: none"> a. Detection b. Recognition c. Identification d. All of the above (PTZ) 2. Camera Lens Requirements; <ol style="list-style-type: none"> a. Pan, Tilt, Zoom (PTZ) b. Fixed c. Dual d. Hemispheric e. Thermal f. Licence Plate Recognition 3. Mounting options; <ol style="list-style-type: none"> a. Hinged (Tilt) Pole (Also refer to Operations Function - Item 7) b. Existing Structure c. Existing Building – Name, Location d. Other – Tree Interference, Signage Interference 4. Electricity availability <ol style="list-style-type: none"> a. Yes b. Within distance (circle) <ol style="list-style-type: none"> i. 5m, 10m, 20m, 30m+ 5. Fibre Network availability <ol style="list-style-type: none"> a. Yes. Define network type. b. Within distance (circle) <ol style="list-style-type: none"> i. 5m, 10m, 20m, 30m+ 6. Wi-Fi Network availability <ol style="list-style-type: none"> a. Yes. Define network type. b. Within distance (circle) <ol style="list-style-type: none"> i. 5m, 10m, 20m, 30m+ 7. Other Network or Mobile Network Assets availability <ol style="list-style-type: none"> a. Yes. Define network type. b. Within distance (circle) <ol style="list-style-type: none"> i. 5m, 10m, 20m, 30m+ 8. Lighting <ol style="list-style-type: none"> a. Available <ol style="list-style-type: none"> i. Lux levels (circle) 0- 2 lux;, <10 lux, <20 lux, >20 lux b. Not Available 9. Signage requirements <ol style="list-style-type: none"> a. Number of signs required? b. Type <ol style="list-style-type: none"> i. Pedestrian ii. Vehicle

CCTV FUNCTIONAL REQUIREMENTS	
FUNCTION	CAMERA NUMBER: LOCATION:
OPERATIONS	<ol style="list-style-type: none"> 1. Day Activity <ol style="list-style-type: none"> a. Low b. Moderate c. High 2. Night Activity <ol style="list-style-type: none"> a. Low b. Moderate c. High 3. Area activity changes or plans <ol style="list-style-type: none"> a. Property Developments / Reactivation b. Special events c. Seasonal impacts (trees, shade, activity) 4. Incident Response; <ol style="list-style-type: none"> a. Local Police Team b. Ranger Patrols c. Community Safety Patrols d. Parking Enforcement e. Partner Agency Operation 5. Location Stakeholders: <ol style="list-style-type: none"> a. City of Kalamunda - City Business Units b. Community - residents c. Community - business d. Partner Agency 6. Camera Cleaning Schedule; <ol style="list-style-type: none"> a. Monthly b. Quarterly c. Annually 7. Camera Access Needs (Hinged (Tilt) Pole / EWP) <ol style="list-style-type: none"> a. Routine b. Non-routine 8. Tamper / Image Alarmed; <ol style="list-style-type: none"> a. Yes b. No 9. Daily Camera Check Required <ol style="list-style-type: none"> a. Yes b. No 10. Trees and pruning schedule requirements <ol style="list-style-type: none"> a. Tree pruning required? <ol style="list-style-type: none"> i. Yes ii. No
CONTROLS	<ol style="list-style-type: none"> 1. Camera owner: <ol style="list-style-type: none"> a. City b. Agency c. External Network Access Involved 2. Date Last Serviced 3. Date Next Service 4. Asset Registration <ol style="list-style-type: none"> a. Make, Model, Serial Number b. Date Installed c. Installer d. Sample Image to ANZPAA CheckSheet 5. Asset Registered <ol style="list-style-type: none"> a. Two (2) Year Warranty b. Five (5) Year Camera Replacement Schedule

ANNEXURE G: ASSESSMENT OF NEW CCTV CAMERAS OR LOCATION

ASSESSMENT OF CITY CCTV LOCATIONS

MANDATORY CRITERIA

1. Location CPTED Assessment conducted
2. Camera aligns within the City of Kalamunda strategic planning and crime prevention framework.
3. It is technically and financially viable to install and operate a camera(s) at this location.

Proposed Location	
Camera Requested by	
Assessment Personnel	
Date & Time	

WEIGHTED CRITERIA: Minimum Total Score required: 75

1. Incidence of Crime / Emergency [Maximum 50 points]

- Incidence crime against the person [high, medium, low]
- Incidence of crime against property [high, medium, low]
- The level of recorded anti-social behaviour [high, medium, low]
- Incidence of emergency management situation [high, medium, low]

Criteria	High	Medium	Low
Incidence crime against the person	20	15	10
Incidence of crime against property	10	8	5
Level of recorded anti-social behaviour	10	8	5
Incidence of emergency management situation	10	8	5
Area awareness and situational intelligence offered	10	8	5

2. Level of Human Activity [Maximum 35 points]

- The proximity to a main thoroughfares or crowded places
- The level of pedestrian activity [high, medium, low]
- The proximity to transport hubs
- The proximity to licensed or high risk premises
- The proximity to large events or venues
- The proximity to community assets or landmarks
- Proximity and line of sight to other CCTV cameras

Criteria	High	Medium	Low
The proximity to a main thoroughfare or crowded place	5	3	1
The level of pedestrian activity	5	3	1
The proximity to transport hubs	5	3	1
The proximity to licensed or high risk premises	5	3	1
The proximity to large events or venues	5	3	1
The proximity to community assets or landmarks	5	3	1
Proximity and line of sight to other CCTV cameras	City 5	Business 3	Private 1

List other CCTV owners / operators – Business, Private

3. Logistical Requirements [Maximum 24 points]

- Cost of network connection (Fibre optic, Cat6 cable, RF)
- Cost of access to power
- Cost of civil infrastructure installation
- Existing of restrictions or constraints that have a significant impact on the cost or viability of installation
- Cost of maintaining and servicing post-installation
- Lux level of existing lighting systems

Criteria	High	Medium	Low
Cost of network connection	4	3	2
Cost of access to power	4	3	2
Cost of civil infrastructure installation	4	3	2
Existing restrictions on installation	2	3	4
Cost of maintaining and servicing post-installation	4	3	2
Lux level of existing lighting systems	4	3	2

4. Value to the Network [Maximum 10 points]

- The extent to which the new installation will enhance the capability of the existing CCTV network to sequentially track offenders.

Criteria	High	Medium	Low
Enhance existing network sequencing	10	7	4

Results

Scoring Totals	High	Medium	Low
Total for each Category			
Overall Total Score			

Additional Comments

ANNEXURE H: CODE OF CONDUCT

THIS CODE OF CONDUCT HAS BEEN DEVELOPED TO ENSURE THAT THE HIGHEST ETHICAL STANDARDS ARE MAINTAINED BY ALL AUTHORISED PERSONNEL WHO WORK WITH CITY OF KALAMUNDA CCTV SYSTEMS.

Any defined terms are to be given the same meaning as those terms are given in the CCTV Strategy.

NON COMPLIANCE WITH CODE OF CONDUCT

This Code of Conduct applies to all Authorised Personnel.

CCTV Operations require the highest standards of integrity and honesty. Consequently, any breach of this Code of Conduct could result in disciplinary action, up to and including dismissal and criminal proceedings.

ETHICAL USE OF CCTV SYSTEMS AND RECORDED MATERIAL

Authorised Personnel shall:

- at all times, act honestly and legally;
- treat all Recorded Material in an ethical manner and with the utmost of care, respect and dignity.
- interact with other Authorised Personnel, WA Police Force and stakeholders in a timely, courteous and cooperative manner.

CONFIDENTIALITY

‘Confidential Information’ means any images or footage whether live or recorded that are captured by the City’s CCTV systems and any information arising from those things.

Authorised Personnel agree:

- not to disclose any Confidential Information other than to other Authorised Personnel to the extent that it is necessary for them to carry out their duties as Authorised Personnel; and
- to use her or his best endeavours to prevent the unauthorised use of any Confidential Information by any other person.

OPERATING CONDITIONS

In the course of carrying out their duties, Authorised Personnel shall:

- comply with the City’s CCTV Strategy and it’s Annexures;
- not use CCTV Operations for personal benefit or in a manner which invades individual or group privacy;
- use cameras in accordance with the CCTV Objectives, with priority being given to circumstances where there is an operational necessity or a reasonable belief that an offence has or is likely to occur;
- only allow access to Recorded Material in accordance with the CCTV Policy and the CCTV Management (Standard Operating) Procedures (Annexure E to the CCTV Strategy);
- only destroy CCTV Operational records and Recorded Material (hard copy or electronic) following receipt of written authorisation by the Authorised CCTV Manager to do so, and destruction of CCTV Operational records and Recorded Material shall be undertaken in accordance with the CCTV Management (Standard Operating) Procedures (Annexure E to the CCTV Strategy).

REPORTING A BREACH OF THE CODE OF CONDUCT

If Authorised Personnel consider that the conduct of an officer of the City of Kalamunda or the WA Police Force breaches a provision of this Code of Conduct then that person must report that conduct to the Authorised CCTV Manager. Any reported matters will be handled by the City with sensitivity.

I have read and understood the CCTV Code of Conduct and agree to abide by its terms.

SIGNATURE:..... DATE:.....

ANNEXURE I: APPLICATION FOR RECORDED MATERIAL

CITY OF KALAMUNDA CCTV STRATEGY

FORM 1 INSTRUCTIONS

The following are guidelines for completing an application to view or obtain a copy of Recorded Material by a member of the WA Police Force. Following the guidelines and providing the required information will assist with the prompt identification, processing and approval of the application. All requests and use of Recorded Material must be auditable and comply with the terms of the WA Police Force MOU.

NATURE OF APPLICATION

- **View Recorded Material**– Ticking this box permits the Case Officer/s listed on the application to view the relevant Recorded Material and Recorded Material will not be released if only this box is ticked.
- **Obtain a copy of Recorded Material**– Ticking this box allows the Case Officer/s listed on the application to take a working copy of the Recorded Material. Any Recorded Material released remains the property of the City of Kalamunda and is subject to the Form 1 Conditions of Use.

APPLICANT DETAILS

- **Authorising Officer Details** – WA Police Force Authorising Officers are permanent or acting senior officers at the rank of Inspector or above or the Officer in Charge of the Forrestfield Police Station. Any officers not authorised to approve the application will cause the application to be rejected.
- **Case Officer Details** – Write the name and rank of the Case Officer and/or any other Officer requiring access to view relevant Recorded Material.

INCIDENT DETAILS

- **Location of Incident** – Please describe the original incident location as accurately as possible including the names of any nearby premises and streets. Also add details of locations and directions persons may have decamped in if known, as numerous VSS cameras may have recorded the persons involved either before or after the incident.
- **Details of Incident** - Please describe what took place and the individuals involved including last known directions, colours of clothing, accessories etc and/or attach an edited version of the Victims Statement or Narrative.
- **Type of offence incident relates to** – Write the offence here ensuring it meets with the guidelines set out in the City of Kalamunda Code of Practice. Please also include the Police Reference No.

SIGNATURES

- **Authorising Officer** – Ensure that permanent or acting senior officers at the rank of Inspector or above or the Officer in Charge of the Forrestfield Police Station or relieving at that rank authorises the application.
- **Case Officer** – Ensure the Case Officer, who is making the application, signs the second page after reading the Conditions of Use.

For assistance please contact

City of Kalamunda via enquiries@kalamunda.wa.gov.au

CITY OF KALAMUNDA CCTV STRATEGY

APPLICATION TO VIEW/OBTAIN A COPY OF RECORDED MATERIAL BY A MEMBER OF THE WA POLICE FORCE

FORM NUMBER ____

VSS Ref No:

Date Received:

TRIM Reference:

NATURE OF APPLICATION

- View Recorded Material
- Obtain a copy of Recorded Material

The information provided in the application is true and correct.

APPLICANT DETAILS

AUTHORISING POLICE OFFICER DETAILS

Name & Rank:

Signature:

(Must be Inspector or Above)

CASE OFFICER DETAILS

Name & Rank:

Email Address:

Local Area Command:

Date of Application:

Telephone Number:

INCIDENT DETAILS

Police Event No:

Police Case No:

Date of Incident:

Time of Incident:

Type of offence incident relates to:

Location of Incident:
(Please describe the location as accurately as possible including the names of any nearby premises and streets)

Details of Incident:
(Please describe what took place and the individuals)

involved or attach edited version of the Victims Statement or Narrative)

(Please sign second page)

CITY OF KALAMUNDA USE ONLY

Approval **Approved** **Rejected**

Reason for Rejection

By

Print name of City of Kalamunda Responsible Officer

Signature

Signature of City of Kalamunda Responsible Officer

Date

Reviewed by

Print name of person who performed review

Signature

Signature of Reviewing Officer

Date

Police Copy No

Security Seal No

Nil Find

Collected / Viewed by

Name & rank of WA Police Force Officer

Signature

Signature of WA Police Force Officer

Date

CONDITIONS OF USE

1. Any Recorded Material supplied to police remains the property of the City of Kalamunda and is only provided for the purpose it has been requested for.
2. Recorded material will only be provided on copy protected CD/DVD only or protected electronic file. Any further copies must be requested from the City of Kalamunda.
3. Copies of any Recorded Material released to police are not to be reproduced except for court purposes or for the purpose of review by the WA Ombudsman.
4. Police will not show, display or release Recorded Material publicly or to the media without the prior written consent of the City of Kalamunda.
5. Police will keep Recorded Material secure and protected.
6. The City of Kalamunda will retain a sealed master copy of any Recorded Material provided to police which may be subpoenaed if necessary.

SIGNATURE

I have read the Conditions of Use and the Conditions of Entry above and agree to abide by them.
WA Police Force Case Officer:

Name and Rank

Name & rank of WA Police Force Officer

Signature

Signature of WA Police Force Officer

Date

SUBMISSION

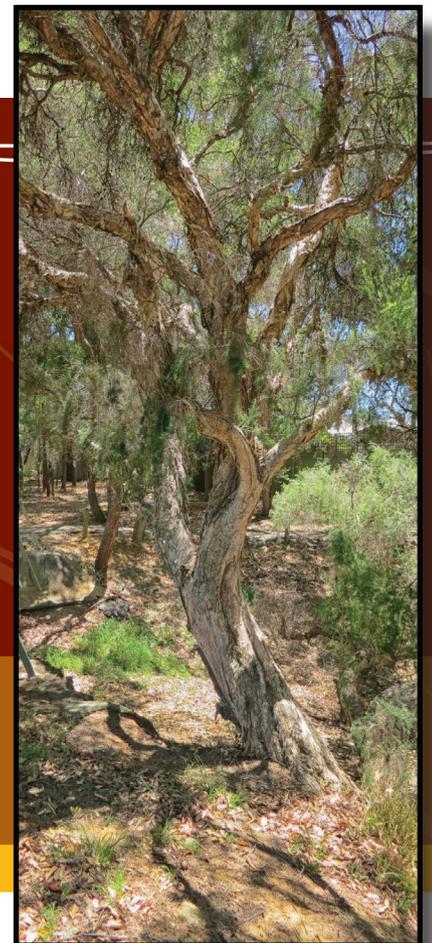
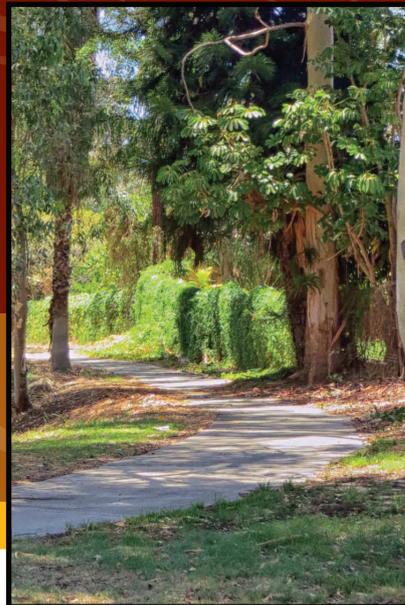
Completed applications for the viewing/supply of Recorded Material should be forwarded to:

Chief Executive Officer, City of Kalamunda via **Email** enquiries@kalamunda.wa.gov.au

Woodlupine Creek

Forrestfield District Centre

LANDSCAPE MANAGEMENT PLAN



The Woodlupine Creek Management Plan and Urban Design Guidelines have been prepared for the Shire of Kalamunda by:

Sally Malone Design; malone@westnet.com.au

and

Chris Antill Planning and Urban Design; chrisantill@westnet.com.au

Document Control

REV	DATE	AUTHOR	Issued to:
In-House Working Document	29.01.14	SM/CA	SOK, EE
DRAFT	22.08.14	SM/CA	SOK, EE
FINAL REPORT	18.12.14	SM/CA	SOK
Revision A			
Revision B			
Revision C			
Revision D			

Chris Antill Planning and Urban Design (CA)
 Essential Environmental (EE)
 Sally Malone Designs (SM)
 Shire of Kalamunda (SOK)

Abbreviations Glossary

<i>Abbreviation</i>	<i>Name</i>
CPTED	Crime Prevention Through Environmental Design
DoW	Department of Water
DFES	Department of Fire and Emergency Services
DPAW	Department of Parks and Wildlife
FDCSP	Forrestfield District Centre Structure Plan
DUP / SUP	Dual Use Paths / Shared Use Paths
FDC	Forrestfield District Centre
POS	Public Open Space
UDG	Urban Design Guidelines
WC	Water Corporation
WSUD	Water Sensitive Urban Design

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01 EXECUTIVE SUMMARY



In April 2012, the Shire of Kalamunda adopted the The Forrestfield District Centre Structure Plan (FDCSP) to help guide the development of this important community hub.

One of the priority actions identified in the Plan was the need to address various issues relating to Woodlupine Creek, which runs centrally through the District Centre.

The Structure Plan notes;

“Woodlupine Creek is degraded and appears to suffer from seasonal flooding followed by summer drying out. The culvert under the southern access road is tagged with graffiti and may be a focus for unwanted activities. However, several areas along the Creek have beautiful large, mature trees, interesting changes in level, and lush lawns and native gardens, indicating the Creek has the potential to be a major asset to the Centre.”

The Shire of Kalamunda subsequently commissioned this Landscape Management Plan in parallel with a Hydrological Survey and the development of Urban Design Guidelines (as recommended in the FDCSP) for the Creek and Reserve between Strelitzia and Dawson Avenues in Forrestfield.

The Management Plan identifies a vision, issues and goals for Woodlupine Creek and its Reserve, and proposes 68 management recommendations to guide both the management of the Reserve, and future landscape and public place design detail.

Management recommendations are grouped into 6 areas to allow clear goals to be articulated:

- Management for Recreation;
- Management for Natural Values;
- Management for Water Flows;
- Management for Maintenance;
- Management for Development, and
- Monitoring and Review.

A drawing summarising the management approach and public open space (POS) enhancement suggestions is included in Section 4.0 of this report, and Urban Design Guidelines to ensure that private development addresses the Reserve are provided in the Appendices.

The Management Plan needs to be read in conjunction with the Woodlupine Creek Hydrology Study (Essential Environmental 2014) which identifies specific works to manage erosion and water quality issues, and proposed priorities.

02 INTRODUCTION

2.1 SCOPE OF THE LANDSCAPE MANAGEMENT PLAN

Landscape management plans have the following broad goals:

- To establish the vision, goals, outcomes, measures and long-term strategies for parks and reserves;
- To be cognizant of the relevant statutory documents, legislation, policies and guidelines adopted by stakeholders;
- To conserve the inherent values of the park or reserve; and
- To manage the use of the asset for the benefit of the community.

Management plans generally have a 15-year ‘life’, and require regular reviewing within that period.

This management plan is concerned with a suburban watercourse reserve, that has a relatively ‘developed’ character, which therefore shapes the goals and recommendations following.

The management site location is shown below:



Figure 1; Site Location

2.2 BACKGROUND

Forrestfield is a foothills suburb of the Shire of Kalamunda, which the Shire's Local Planning Strategy has identified as a locality that can accommodate significant population growth. Sitting centrally within the suburb is the Forrestfield District Centre (FDC), which is made up of a variety of commercial uses and community facilities and acts as a town centre for local residents. Running through the FDC is Woodlupine Creek and its bounding Reserve. Woodlupine Creek and Reserve are the subject of this management plan, considered within the wider context of the FDC.

2.3 THE FORRESTFIELD DISTRICT CENTRE STRUCTURE PLAN

In April 2012, the Shire of Kalamunda adopted the The Forrestfield District Centre Structure Plan (FDCSP) to help guide the development of this important community hub. The FDCSP is included in the Appendices of this report..

One of the priority actions identified in the Plan was the need to address various issues relating to Woodlupine Creek, which runs centrally through the District Centre.

The following text is taken directly from the Structure Plan report.

“Woodlupine Creek is degraded and appears to suffer from seasonal flooding followed by summer drying out. The culvert under the southern access road is tagged with graffiti and may be a focus for unwanted activities. However, several areas along the Creek have beautiful large, mature trees, interesting changes in level, and lush lawns and native gardens, indicating the Creek has the potential to be a major asset to the Centre.”

The Shire of Kalamunda subsequently commissioned this Landscape Management Plan, in parallel with a Hydrological Survey and the development of Urban Design Guidelines, as recommended in the FDCSP.

2.4 CONTEXT

2.4.1 STUDY AREA

The study area of this management plan focuses on the Public Open Space (POS) reserve which divides the FDC, the lots immediately adjacent to the POS and, for creek management purposes, the section of the Creek downstream of the FDC to Dawson Avenue.

The POS has a woodland character; being open grassed areas under a canopy of mature native trees; predominantly Marri, Jarrah and Paperbarks. The Creek meanders through the site with very steep banks in some locations, and gently sloping banks in others. A shared use path (SUP) follows the edge of the Creek, sitting over 2m higher than the Creek in places, and within the flood plain in others.

The Woodlupine Community Centre is located south of the Creek and is currently the only building in the study area which faces the POS and takes advantage of the amenity of the Reserve.



Figure 2; Scope of Study.

2.4.2 LAND OWNERSHIP AND CONTROL

The POS is part of a linear reserve which follows Woodlupine Creek from Whistlepipe Gully in the Darling Scarp, to Yule Brook and then on to the Canning River. While the POS is Shire owned, Woodlupine Creek (or Brook as it is known in some locations) is listed as a Main Drain and as such is part of the Water Corporation's stormwater management system. Any changes to the hydrology of the Creek requires approval from the Water Corporation (WC).

The Shire of Kalamunda is responsible for maintenance and management in the POS, and there is some shared public liability responsibility between WC and the Shire in regards to the Creek and its infrastructure.

Other land use areas in the FDC are illustrated below. The hatched yellow area is currently under consideration for a change in zoning to medium density housing and commercial use.

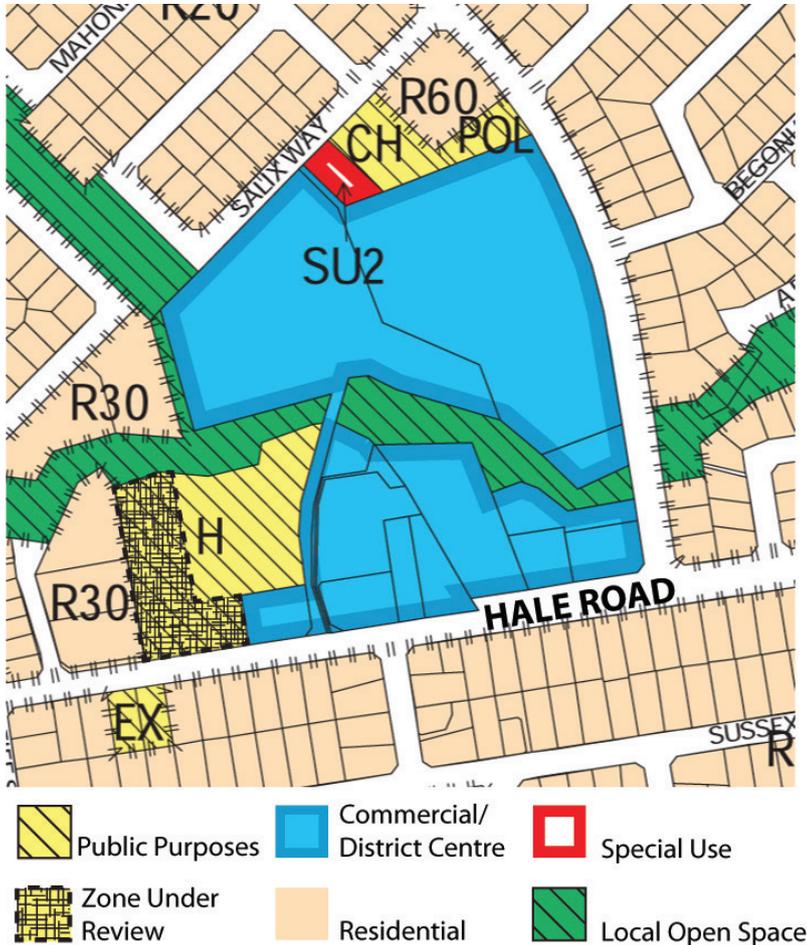
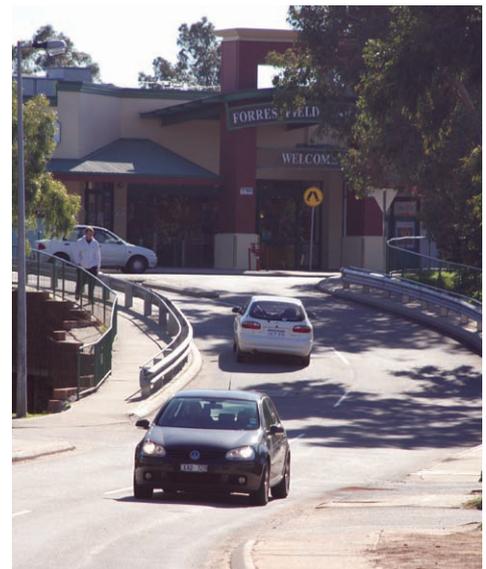


Figure 3; Land Use for the FDC.

Running north-south through the FDC is a private access road. The Shire is in the process of considering bringing this road and its reserves into public ownership. The bridge (currently un-named) and its infrastructure are also privately owned.



2.4.3 HERITAGE AND CULTURAL STATUS.

There are no registered heritage sites within the study area, or sites listed on the Shire’s Municipal Inventory. There are no registered sites of Aboriginal significance within the study area. None of the POS reserve is listed as a “Bush Forever” reference site. (Bush Forever is a strategic plan for the conservation of bushland on the Swan Coastal Plain which aims to help conserve biological diversity.)



2.4.4 ADJACENT DEVELOPMENTS

Two new developments are pending at the time of writing.

A residential subdivision off Strelitzia Avenue and south of the Creek, has received planning approval and is under construction.

A Medium Density (affordable housing) development to the west of the Community Centre is in the conceptual phase, and re-zoning will be required prior to any approvals being given. This development and any other future developments will need to comply with the FDCSP, and (once adopted) the Urban Design Guidelines prepared in parallel with this management plan.

Please see Appendices for the Urban Design Guidelines.

2.5 MANAGEMENT VISION

The shared goal for the Hydrological Survey, Urban Design Guidelines and the Management Plan is:

“For the Woodlupine Creek to become a significant high amenity focal point for the community”

2.5.1 ISSUES

The key landscape and hydrology related issues which need to be addressed to achieve this vision, as outlined in the brief, are:

- Erosion, bank stability & sedimentation;
- Flood risk;
- Stormwater inflows & management;
- Creek water flows;
- Obstructions in the Creek bed;
- Water quality;
- Wildlife habitat;
- Tree health and safety;
- Weeds and pest control;
- Native vegetation and rehabilitation;
- Antisocial behavior, vandalism & dumping;
- Visual quality;
- Pedestrian access (alongside, connections to outside the project area & Creek crossing points);

- Identification & design of passive recreation “nodes”;
- Physical and visual relationships between the Creek and its Reserve, and adjoining private developments (existing and future);
- Ongoing maintenance, roles and responsibilities; and
- Monitoring and review.

2.5.2 GOALS

The brief also identifies broader goals for the Creek and its immediate environs as an outcome of the Management Plan, these include the following objectives:

- To address issues affecting the Creek and its Reserve including storm water management in public and private lots, water quality and creek line ecosystem integrity, and aesthetics;
- To integrate waterway improvements with adjacent developments and provide design guidelines for open spaces, as well as adjacent new developments;
- To develop a coordinated approach to the ongoing management of Woodlupine Creek and its Reserve between the Shire, Water Authority, adjacent landowners and community;
- To increase the community’s appreciation of the Creek, its vegetation and its associated open spaces for passive recreation purposes; and
- To improve pedestrian and cyclist access and safety across and along the Creek line.



Strelitzia Ave culvert.

2.5.3 MANAGEMENT PLANNING

The Shire of Kalamunda initiates and adopts management plans for a variety of its assets. The process for the preparation of this management plan is as illustrated in the table below:



1 Hydrological and other Engineering, Landscape and Urban Design, Land Use Planning and Shire Reserves Management.

2 Including the Department of Water, Water Corporation, the community and adjacent landowners and tenants.

03 MANAGEMENT



Management discussions and recommendations are grouped into 6 chapters to assist with identifying the individual goals for different aspects of the Creek and Reserve. These are:

- Management for Recreation
- Management for Natural Values
- Management for Water Flows
- Management for Maintenance Efficiency
- Management for Development
- Monitoring and Review

3.1 MANAGEMENT FOR RECREATION

Woodlupine Creek bisects the retail and community service 'heart' of Forrestfield and is contained within a reserve, which ranges between 35m and 15m wide, and is approximately 750m long between Strelitzia and Dawson Avenues.

The Reserve and Creek have the potential to be a unifying activity hub for the FDC, rather than a dividing element. Management recommendations are aimed at bridging physical barriers and encouraging increased use and appreciation of the Creek.

For management purposes, this study has divided the Creek into two zones:

- The FDC Zone, which will have more intense community use and therefore more infrastructure and facilities, and
- The Residential Zone, which will be managed as a lower use recreational asset.

3.1.1 RECREATION USE AND SHIRE POLICY

Community Facilities Plan (Draft 2011)

The Shire of Kalamunda is developing a policy to help guide the prioritization of community infrastructure, and this has a direct bearing on the development and management of the Woodlupine Creek Reserve. The DRAFT policy notes:

“The redevelopment of the Woodlupine Community and Family Centre to a District level community centre is recommended for 2015/16. Because Forrestfield is recognised as a district centre from a planning perspective and with a likely growing presence of government services and non government community organisations as the population grows, it is recommended that the demand for District level community facilities to cater for Forrestfield Wattle Grove be provided earlier than 2019.

The redevelopment of the Forrestfield Library to a District level library has also been identified within the five year recommendation and priorities, to occur at the same time as the redevelopment of the Woodlupine Community and Family Centre to a District level community centre to create a community and civic hub.”

Key Points

The Forrestfield District Centre Zone

While the Woodlupine Creek Reserve itself is not specifically noted as a ‘Park’ in the Community Facilities Plan, the development of a new district library and additional community centre facilities suggests that their setting – the Reserve – will need enhancement and additional facilities to accommodate increased activity and provide a high degree of amenity around the new buildings.

Recreation support facilities; such as a drinking fountain, public toilets, pay ‘phones and bike racks, may be best provided as part of the new buildings’ curtilage. However, consideration should be given to designing the public toilets so that a unisex / accessible toilet is open to the Reserve when the library and centre are closed.

A BBQ is currently located to the north of the Community Centre and consideration should be given to continuing to provide (and enhancing) these facilities at the redeveloped Community Centre; ideally in a location which overlooks the Creek. This would support group gatherings and community events, and help bring activity to the area.

Woodlupine Primary School and two recreation reserves are located to the north west of the study area. These may be the best locations for playground equipment. The Woodlupine Community Centre has a 3 Year Old Kindergarten (Woodlupine Family Centre) and play groups, but at this stage a public playground adjacent to the Centre would not be justified. However, the need for a playground should be re-considered with the development of the Centre to ‘District’ level.

The POS immediately surrounding the community facilities should be enhanced to a slightly higher standard than the rest of the Reserve to support the likely increased activity around the facilities, but remain a recreation area. This may mean the inclusion of recreation infrastructure such as picnic shelters, lighting and rubbish bins.

The areas not immediately adjacent to the proposed and existing community buildings, can be enhanced to a “Local Park – Semi-developed” standard managed as Recreation Space³, which includes amenity spaces and community use facilities.



Informal ‘picnic setting’

³ As Per the DSR Classification Framework for Public Open Spaces 2012.



Suitable recreation uses include:

- Walking and jogging;
- Fresh-air Gyms;
- Dog walking;
- Cycling (family based, not commuter cyclists);
- Weekend picnicking and weekday lunching;
- Bird (wildlife) watching; and
- Supervised water play.

The Residential Zone

The Residential Zone, which includes the Creek Reserve from the western boundary of the FDC to Dawson Avenue, will be managed as a Nature Space⁴. Natures Spaces provide places where people can enjoy natural environments, whole also protecting biodiversity values.

Suitable nature uses include low impact activities:

- Walking;
- Cycling;
- Picnicking;
- Wildlife watching; and
- Nature play.

Supporting and encouraging recreation and nature activities will:

- Improve passive surveillance in the Reserve and hence safety and security;
- Improve the amenity of the Reserve, as well-used places are more enjoyable;
- Improve the range of activities available to local residents, and inherent health benefits; and
- Improve the community's understanding of the value of the Creek and Reserve.

4

As Per the DSR Classification Framework for Public Open Spaces 2012.

Recommendations

Support increased community activity at the Forrestfield District Centre.

In the area of the Reserve adjacent to the proposed library and enhanced community centre:

1. Install two picnic shelters, accessible to people in wheelchairs and families pushing prams. Fit these with timed lighting;
2. Construct appropriate linking footpaths and shared use paths – these need to allow for accessible grade routes to the picnic shelters;
3. Provide a small number of high quality benches (4 - 8) with backs and armrests close to paths and in a variety of summer shade / winter sun locations; and
4. Provide two bins (in enclosures) at path junctions, and above the 1:10 year flood line.

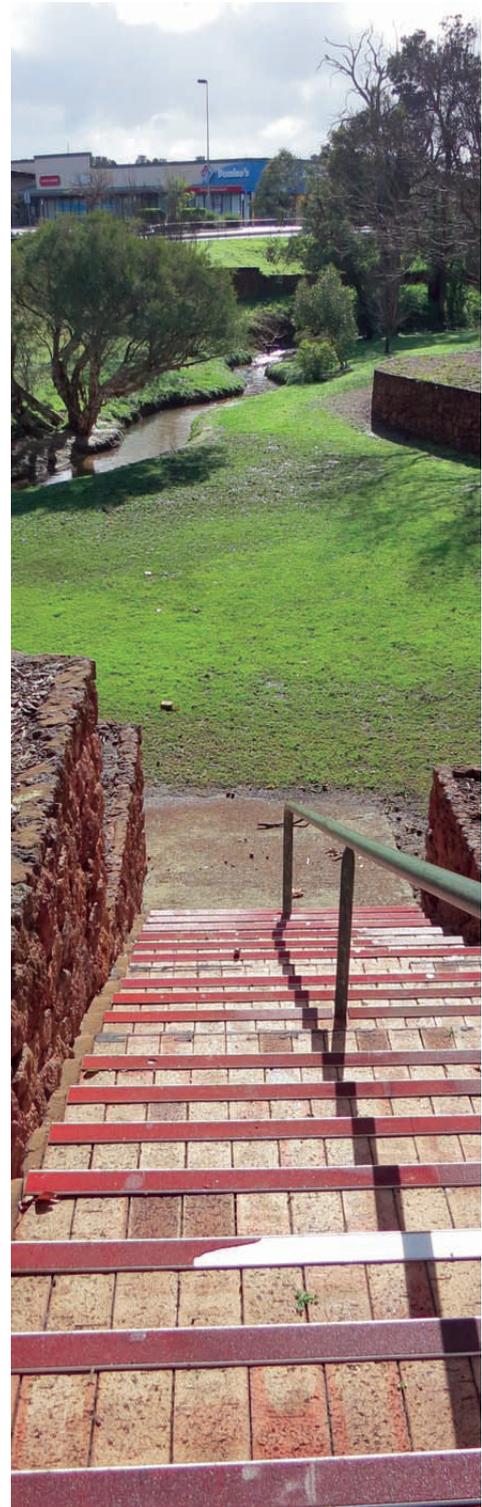
In the remainder of the Reserve:

5. Construct recreation nodes at intervals along the Reserve, these can include open grassed areas (with or without irrigation), shade tree planting and solar lighting if increased lighting levels are required to improve safety and security;
6. Install a combination of picnic platforms and benches at nodes along the Reserve;
7. Construct appropriate linking shared use paths (SUP) to create a circuit walk in the Reserve, and connect across Woodlupine Creek;
8. Review signage as enhancements are completed, so as to provide clear direction, management and interpretation signage;
9. Install distance markers along the SUP to allow walkers/runners to plan exercise routes; and
10. Provide dog waste bag dispensers and enclosed rubbish bins at the junctions of SUP and adjacent roads (4 – 6 bins and dispensers).

Investigate 'shared' facility provision with the new library and enhanced community centre.

In the design brief for the new and improved building facilities:

11. Construct one of the toilets with an external door for Reserve users. Ideally this toilet should have baby change facilities, be unisex and fully accessible. It should be locked overnight and located in an area with good passive surveillance and lighting;





12. Install bike racks and a drinking fountain adjacent to the building; and
13. Provide an outdoor BBQ area for community events overlooking the Reserve.

3.1.2 ACCESS

Access in the POS falls into three categories; recreation, maintenance and emergency access.

Key Points

Recreation access requires walk circuits, clear entry and exit points, parking adjacent to entry points, disabled access to specific facilities and safe road and creek crossings. Recommendations for improved access through SUP provisions have been discussed above. Some locations in the Reserve have steep cliff faces, and access to these edges needs to be managed in a way which does not over-use visually intrusive fencing. The Hydrology Study⁵ recommends post and rail fences where new gabions and retaining walls are over 1.5m high.

Maintenance access will be required to manage turf, revegetation, infrastructure and creek flow.

Emergency access is required in case of accidents, fire and flood. Allowance for unrestricted ambulance access within the Reserve is unrealistic, but adequate access via adjacent lots can be provided. The maximum distance a casualty would need to be carried is less than 50m at the time of writing, as there are a number of car parks bordering the Reserve. Access for a DFES vehicle with a fire fighting unit should be provided into the Reserve.

Recommendations

14. User access to the edge of cliff drop-offs should be managed with a combination of fencing and barrier planting. A review of fencing and barriers will need to be undertaken with hydrology works, and a variety of fencing options selected.
15. Access for a small Shire Parks and Gardens maintenance truck should be accommodated with a trafficable entry point at either end of the Reserve sections, and a 3m wide clear route following the Creek – this route may follow the SUP alignment.
16. A new maintenance access route should be created from Magnolia Way elbow to the creek line to allow enhanced maintenance for water flows.
17. Bins should be located where they can be accessed by the rubbish truck; i.e. adjacent to roads or where they can be easily wheeled to a truck.

5

Essential Environmental 2014

18. Access for a small Department of Fire and Emergency Services (DFES) fire unit should be accommodated with a trafficable entry point at either end of the Reserve sections, and a 3m wide clear route following the Creek – this route can follow the maintenance access route above.
19. Unauthorized vehicles should be excluded with the use of removable lockable bollards.

3.1.3 SAFETY

Safety considerations in the Reserve and Creek include concerns about criminal and anti-social activity, risks associated with water (particularly in regard to young children), accidental injury and danger during flood incidents.

Key Points

Criminal and anti-social activity can be partly managed via Crime Prevention Through Environmental Design (CPTED) principles. This includes designing places so that:

- There is excellent passive surveillance;
- Users can always see an entry and exit;
- Lighting levels are high in potential trouble spots;
- Infrastructure and planting is not located where it will provide a 'ladder' into private property; and
- Materials and finishes are robust and difficult to graffit.

In addition:

- Excellent maintenance is also a key factor; places which appear run-down and uncared for attract further damage and unfortunately, legitimate users perceive these areas as unsafe and stay away, further reducing the opportunity for passive surveillance and attracting yet more antisocial activity.
- Scheduling activities in POS areas, increases desirable and legitimate use, attracts more people and increases the perception that these areas are 'owned'. Initiatives such as Fresh-air Gyms, nature walks and walking clubs are examples of suitable organised activities.
- Regular security and maintenance patrols of the Creek length and know trouble spots will assist in discouraging unwanted uses.





Concerns about water hazards can be reduced to some degree through design, but it is unrealistic to completely ‘fence-off’ natural waterways and drainage creeks. Anecdotal evidence⁶ suggests the majority of drownings occur due to alcohol use, diving into shallow water, accidentally falling into water (and possibly panicking) and inattention.

Children aged 1 – 4 have the highest drowning rate in Australia, double any other age group. However, the most common location of drowning of children under five was in a private swimming pool (45%). The great majority of children of this age who drowned had fallen or wandered into water (72%). Only a small proportion drowned while swimming, paddling or wading (7%).

A study of drownings and near-drownings of children identified several issues relating to supervision, these included situations where there was confusion about who was supervising the child at the time, or a degree of disruption to routine. The findings also suggest that there was some confusion about the degree of supervision necessary, i.e., that the company of older children was sufficient supervision.

The conclusion seems to be that supervision is the key element in preventing drowning in small children. However, design initiatives that could contribute to improved water safety include:

- Avoiding steep drop-offs into water – a gradual slope is easier to climb out of;
- Using planting to control access;
- Providing small ‘beaches’ as designated shallow paddling areas for small children, with clear site-lines so parents to supervise water play; and
- Managing infrastructure such as pipes and drop structures to discourage/prevent access.

Accidental injury and danger during flood incidents is perhaps the least common concern, and can be addressed by:

- Ensuring dwellings are not built in flood zones (i.e. through the use of planning policy and design guidelines);
- Managing infrastructure such as pipes to discourage/prevent access or accidental entrapment; and
- Utilising warning signage and emergency service support during flood incidents to control access.

⁶

Australian Bureau of Statistics

Recommendations

Risks associated with criminal and anti-social activity, water hazards and accidental injury during flood incidents can be addressed as follows:

20. Apply CPTED principles to building and landscape design in the Reserve;
21. Schedule community activities and patrols within the Reserve, or overlooking the Reserve;
22. Avoid steep drop-offs into water, design the landscape to control access and provide small 'beach' areas for supervised water play;
23. Design infrastructure such as pipes and drop structures to discourage/prevent access; and
24. Ensure dwellings are not built in flood zones.



Shandy on drug sniffing patrol, Woodlupine Creek Reserve.

3.1.4 DOMESTIC ANIMALS

Many Reserve users will want to walk their dog along the Creek. All uses that bring extended hours of activity to the Reserve should be encouraged, but domestic pets need to be managed so as not to cause a nuisance or threaten wildlife.

Recommendations

25. Install "dogs on a leash" signage, and place dog waste disposal bags and bins at key points.
26. Consider designating one waterside area as a 'dog beach' so that dog paddling can be managed.
27. Consider designating a 'free exercise zone' in an adjacent large reserve in Forrestfield, so that dogs can be let off the leash in a controlled area.
28. Encourage cat owners to keep their cats indoors, or confined to their own garden.



Internal access road bridge

3.1.5 COMMUNITY INVOLVEMENT / OWNERSHIP

The more the Reserve is used by local residents, and the greater their sense of ownership of the Creek, the more valued and cared for it will become. This in turn will reduce the incidents of anti-social activity, and may have flow-on benefits to a reduction on costs to the Shire (in repairs and maintenance) and financial benefits to the residents in terms of improved land values.

Key Points

The benefits of encouraging more activity, over longer hours and all seasons, have been discussed previously. By undertaking enhancements in the Reserve and involving the community in these, the Shire can help build ownership of the Creek.

Protection and conservation of the natural elements within the Reserve (water quality, habitat), could be enhanced by educating residents and enlisting them in assisting with environmental care. Issues such as garden weed dumping, illegal drains and domestic pets hunting bird life could be addressed as part of an education programme targeted at residents, so that they understand the Reserve is their asset, and not just a drain.

Recommendations

29. Support increased activity within the Reserve.
30. Consider establishing a 'Friends of' group.
31. Consider an education programme (including water sensitive urban design), through interpretive signage, printed flyers, and / or 'ranger' nature walks.
32. Encourage new developments to face the Creek, and take advantage of its amenity.

3.2 MANAGEMENT FOR NATURAL VALUES

3.2.1 SITE CHARACTERISTICS

Climate and rainfall

Forrestfield sits below the Darling Scarp and the Reserve is within 6km of the Perth Airport, which is where the following climate statistics have been recorded:

- Mean maximum temperatures; 31.6C (February)
- Mean minimum temperatures; 7.6C (July)
- Mean annual rainfall; 736mm over 80 rainy days
- Predominant wind patterns (broadly);
Winter south-westerlies and Summer easterlies.

Geology and Soil

Soils within the site are mostly clay, with some sand washed into the Creek bed. The soil type is clearly visible in the eroded banks of the Creek, which illustrate a 'cross-section' over 2m high in places. Woodlupine Creek is part of a natural drainage watercourse, and as such, is set at the lowest level of the Reserve and follows a meandering path.

Hydrology and Catchment Role

The Creek acts as a drainage channel for both the immediate catchment area – which is mainly comprised of large paved car parks and commercial buildings - and the upstream area. The authors of the concurrent Hydrology Survey note that this upstream section is very steep, which results in high velocity peak flows after storm events.

Water quality in the Creek is relatively good, being fresh water, neutral pH., low concentrations of contaminants and moderate suspended solids (this may fluctuate at different times of the year). Nutrient concentrations are slightly above the average and acceptable guidelines for an ecosystem of this kind.

Potential flood levels have been predicted for the Creek, and these show an impact on adjacent private lots. A full assessment of the storm water and flood patterns of Woodlupine Creek at this site is being undertaken in parallel with this Management Plan. Please refer to the Hydrology Survey (Essential Environmental Report 2014) for further details on the hydrology, water quality, flow rates and stormwater profiles of the Creek and its Reserve.





3.2.2 ECOSYSTEMS

An ecosystem is a community of living organisms and the nonliving elements of their environment interacting as a system. This network can be of any size, but usually encompass specific, limited spaces.

Woodlupine Creek and its Reserve have a role to play in both the local and wider ecosystems of the foothills. Balancing these roles against the Reserve's use as a recreation asset is a key part of its management.

Key Points

In regard to the immediate surrounds of the Creek, the ecosystem includes aquatic animal species (in small numbers), birds such as ducks, plants, the actual creek itself and surrounding banks⁷. This ecosystem has been largely altered from its original structure as a result of adjacent development, stormwater flows, weed species incursion and possible contaminants from run-off. However, it still has significant value as a habitat (i.e. for nesting ducks), as a natural drainage system and to support plant communities; primarily trees.

Woodlupine Creek and its Reserve also play an important part in a wider ecosystem, connecting water flows that originate in the Darling Scarp to the Canning River. The Reserve is therefore essentially part of a greenbelt which acts as a wildlife corridor, particularly for bird life; as identified in the Shire's Wildlife Corridor Strategy 1998. As such, any initiative which enhances and protects its natural values, has the potential to have a wider environmental benefit.

One of the ways in which landscape initiatives can contribute to the wider ecosystem is through the use of planting to improve water quality. Riparian species can be selected and placed to:

- Reduce sediment by slowing and 'filtering' water flow, allowing particles to settle;
- Reduce nutrients and some contaminants by absorbing them;
- Reduce erosion by slowing water speeds and stabilizing banks with their roots; and
- Provide habitat for living ecosystems.

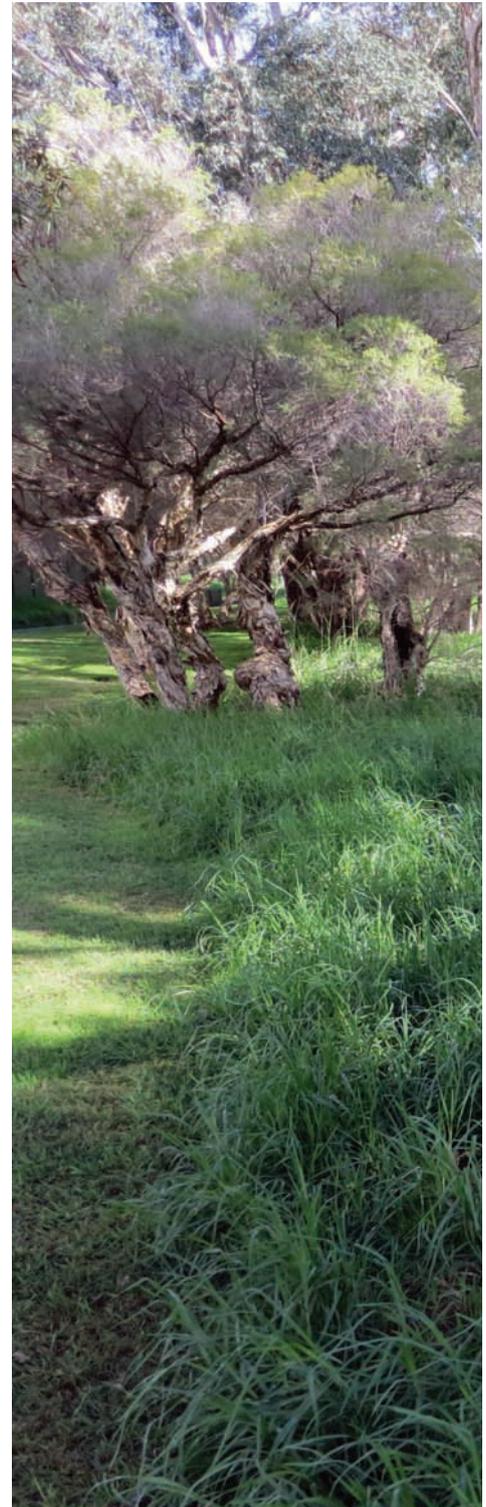
Recommendations

33. Manage the Creek and Reserve to improve ecosystem health.
34. Frame landscape improvement decisions within the role of the Reserve as part of a wildlife corridor.
35. Undertake revegetation and planting programmes which utilise plant species that provide nesting habitats, food and nectar, and protection for native birds and animals.

⁷

A plant and animal survey has not been undertaken by the Shire.

36. Undertake planting that helps to improve water quality in the Creek.
37. Undertake staged revegetation of the length of the Creek Reserve to eradicate weeds and weedy grasses.
38. Design gabions and creek bank retaining structures to accommodate vegetation, to naturalise their appearance and help with bank stabilization.
39. Utilise plants from the Southern River Plant Complex (as per APACE catalogues) for revegetation programmes to reinforce the original endemic plant communities.



3.2.3 PESTS AND DISEASE

Pests can include problem animals (exotic or introduced) as well as weedy plant species. Diseases mainly include pathogens that affect plants such as *Phytophthora sp* (dieback).

Key Points

Exotic animals (dogs and cats) have been discussed in 3.1.4 as domestic pets, and recommendations for their control made. Feral cats are a separate issue to wandering domestic cats, and require control with trapping (baiting is not an option in suburban areas). Other pest species include introduced 'native' species, such as kookaburras, which prey on smaller endemic birds and compete for nesting and food, and 'Eastern' Rosellas, which also compete with endemic birds.

Kookaburras were introduced to WA in 1897, and protected in 1950. They remain a protected species under the Act and so numbers can only be managed with a license issued by the Department of Parks and Wildlife. The kookaburra's impact on small bird populations is considered negligible if numbers are not overwhelming⁸.

While a full survey of pests has not been undertaken by the Shire, the following pests are common in the metropolitan area and are likely to be found in the Reserve and Creek:

- Rabbits
- House Mice
- Black rats
- Mosquito fish
- Feral honeybees
- Yabbies

⁸ Introduced Birds of the World: The Worldwide History, Distribution and Influence of Birds Introduced to New Environments John L. Long Western Australia. Agricultural Protection Board 1971



Plant pests include weedy aquatic species such as *Arundo*, *Typha orientalis* (bulrush), and wetland tolerant plants including kikuyu and other grasses, *Acacia longifolia*, Arum lilies and *Watsonia*. A full list of aquatic and wetland weeds is included in the Appendices (please note, not all of the weeds listed will be present on the site).

Weeds both reduce the natural values of the Reserve by displacing endemic species and, in the case of the *Typha*, may block the Creek, affecting water flows and potentially resulting in more flood events. However, in managing weedy species, it needs to be recognized that the Reserve is not 'pristine' bush, but a highly altered landscape. 'Weedy' species such as some grasses, have a legitimate role to play as lawn areas for recreation, and so a balance needs to be struck between eradication and controlled use.

Additionally, care needs to be taken during eradication programmes of riparian weeds, not to threaten animal communities, particularly birds that may be nesting or using Bulrushes for shelter. Careful timing and staged removal will help reduce any negative impact of weed control on animals. Likewise, large-scale weed removal along the Creek needs to be timed for dry periods, as weed plants may be helping to reduce bank erosion. Revegetation with endemic species will need time to establish and stabilize banks, possibly assisted by stabilizing fabrics, before seasonal flood events occur.

Likely pathogens in the Reserve include members of the *Phytophthora* species; principally *P. cinnamomi*. This mould travels via surface and sub-surface water and is common in areas with watercourses and disturbed sites where earthworks may have been undertaken without hygiene precautions being in place. Banksias, Jarrahs, She-oaks and Grass Trees are all highly susceptible to dieback infection, and there are very few of these trees remaining in the Reserve.

The soil in the Reserve has not been tested, but given its wetland character and the small numbers of 'sentinel' or susceptible plants, it is highly likely that dieback is present in some, if not all the Reserve. The Dieback Working Group is one organisation working towards dieback management, and detailed lists of resistant plants and management methods can be found on their website.

Recommendations

40. Manage animal pests by controlling domestic animals and removing feral pests.
41. Support research and monitoring programmes of pests in the area, and develop management practices based on findings.
42. Undertake a weed survey and develop a weed control plan (in coordination with WC) to manage weeds through mechanical, chemical or biological methods, being cognizant of the whole Woodlupine creek line system.
43. Avoid using weedy species in landscape designs, and never adjacent to the Creek - except in the case of turfed recreation nodes, and only where there is a barrier between the turf and revegetation.
44. Manage weed control so as not to have a negative impact on nesting birds and bank stability.
45. Practice dieback hygiene when moving soils in and out of the Reserve and when using machinery, and utilize dieback resistant plant species where possible.
46. Consider treating dieback infected trees where these trees are significant landscape features.
47. Educate local residents on the negative impacts of plant and animal pests and pathogens.

3.2.4 FIRE

Fire risk is a reality in many of the Shire of Kalamunda's reserves, and management practices need to be in place to reduce fuel loads, and ensure access for fire control. The Woodlupine Creek Reserve runs adjacent to residential and commercial properties, and fires could potentially be started by lightning, accident or arson (DPAW note that these three reasons account for just under a third each of wildfire causes).

Key Points

The risk of 'wildfire' (and its potential to burn uncontrolled), in the Woodlupine Creek Reserve is perhaps less than in some of the Shire's other reserves, particularly bushland areas which have high fuel loads and are difficult to access. The Woodlupine Creek Reserve's character is predominantly grassed woodland, with an understory of mown/slashed turf set below a canopy of mature native trees. Some of the trees; such as paperbarks (*Melaleuca preissiana/raphiophylla*) are relatively flammable, and the canopies of many mature trees are touching, which increases the risk of fire travelling through the Reserve.



The risk of a fire starting is no more or less likely than in any other reserve, other than the ease of access may mean an increase in opportunities for arson. However, given the managed character of the Reserve and the fact that it is bordered by large areas of pavement, the risk of an uncontrolled fire is likely to be relatively low. While controlled burning is used in some locations to reduce fuel load and improve biodiversity; controlled burning is probably not an option (and unlikely to be necessary) in this Reserve, and so the risk from escaped management fires is not likely to be an issue at this site.

Recommendations:

48. Manage fuel loads with regular mowing / slashing and removal of fallen branches.
49. Provide access for a small Fire and Emergency Services (DFES) fire truck via a trafficable entry point at either end of the Reserve sections, and a 3m wide clear route following the Creek – this route can follow the maintenance access route noted in 3.1.2;
50. Consider using fire retardant / resistant species (see Appendices) in the landscape adjacent to buildings and refer to page 45 of the Hydrology Study for species suggestions;
51. Encourage early reporting by the community of fire through signage, and support of DFES initiatives;
52. Work with DFES to identify adjacent fire hydrants (provided for buildings), and determine if these could also service the Reserve;
53. Do not install ‘wheely’ bins in remote or bushy areas in the Reserve (risk of arson), locate these adjacent to footpath entry points to the Reserve.
54. Encourage adjacent property owners and tenants to manage their rubbish and landscapes so as to reduce fire risk.

3.3 MANAGEMENT FOR WATER FLOWS

One of the key drivers for this management plan is the issue of creek bank erosion, stormwater and flood management and the maintenance of water quality and water flows in Woodlupine Creek. As noted previously, a hydrological survey is being undertaken in parallel with this management plan, the goal being that landscape design and management recommendations support and strengthen hydrological recommendations and initiatives. Likewise the concurrent preparation of Urban Design Guidelines will dove-tail into landscape and hydrological strategies.

Please refer to the Hydrological Survey for full details and recommendations (Essential Environmental 2014).

This landscape management strategy aims to support the hydrological initiatives of the Survey, one of which is the management of local drains discharging into Woodlupine Creek. Ideally these drains would be removed, but this may not always be possible. The hydrology report recommends at least 10m buffer between the drain discharge point and the creek bed to reduce erosion, and the following recommendation also applies:

Recommendation:

- 55. Design landscape and revegetation treatments at local drainage outlets to slow water flows, reduce erosion and improve water quality.



Local drain outlet



Dawson Ave Mid Summer 2014



Dawson Ave Mid Winter 2014

3.4 MANAGEMENT FOR MAINTENANCE EFFICIENCY

The Shire of Kalamunda has 175 hectares of ‘developed’ parks and recreation reserves under its management, as well as vast areas of natural bushland. The current population is just over 58,000 which translates to a population density of 1.79 people per hectare⁹. This means that a relatively small ratepayer base is supporting large areas of reserves.

Shire resources may need to be rationalized and prioritised to focus on high use / high value areas, and management measures undertaken to allow maintenance to be carried out efficiently. The following recommendations suggest some measures that could assist with enhanced maintenance efficiencies while still ensuring that the Woodlupine Creek Reserve has high amenity values.



Recommendations:

56. Provide access for a small landscape maintenance utility / truck via a trafficable entry point at either end of the Reserve sections, and a 3m wide clear route following the Creek – this route could follow the SUP route;
57. Restrict high maintenance gardens (such as flower beds) to high use, highly visible areas, and keep their size modest;
58. Insure all new trees are planted a minimum of 2m from concrete paths and road infrastructure;
59. Mulch around the base of trees in turfed areas to improve tree health and exclude grass from trunk areas;
60. Provide a concrete kerb edge or wide mulch band between turfed areas and revegetation to allow a spray edge to control weedy incursion;
61. Restrict irrigated mown turf areas to high use nodes, and maintain the remainder of grassed areas as dry grown and slashed until they can be revegetated with native species;
62. Where irrigation is used, design as subsurface and as ‘vandal-proof’ as practicable;
63. Develop a maintenance schedule to allow regular checking of infrastructure so that minor damage can be repaired before it becomes major, and to discourage vandalism (see CPTED Principles);
64. Locate bins where they can be accessed by the Shire rubbish truck; and
65. Encourage adjacent residents to take ownership of the Reserve and assist in its care by not dumping garden waste, picking up litter and reporting damage and vandalism.



⁹ [www; profile.id](http://www.profile.id)

3.5 MANAGEMENT FOR DEVELOPMENT

The siting, form and visual appearance of development adjacent to the Woodlupine Creek Reserve is critical to the Reserve's ongoing viability and amenity. To this end, some guiding principles for new development planned for sites located adjacent to the Reserve have been prepared in parallel with this Management Plan to encourage more appropriate forms of development that can complement, and take advantage of, the assets the Reserve presents.

The goal of the "Urban Design Guidelines for New Development Adjacent to the Woodlupine Creek Reserve Within the Area Covered by the adopted FDCSP" (UDG) is:

"To conserve and enhance the aesthetic, environmental and recreational value of the Woodlupine Creek Reserve by ensuring that new development located along its edges respects the character, amenity and values of the Creek environs. Development adjacent to the Creek should be of a high design quality, and seek to retain and enhance the Creek's unique contributions to both the surrounding urban environment, as well as the wider biological community."

The UDG are included in this management plan in the Appendices. On adoption of the Management Plan it is recommended that a Local Planning Policy incorporating the UDG be prepared and adopted under the Shire's Local Planning Scheme.

Recommendations

66. Prepare a Local Planning Policy incorporating the Urban Design Guidelines, and adopt this policy under the Shire's Local Planning Scheme.



3.6 MONITORING AND REVIEW

This Management Plan will require reviewing as new development occurs in the Forrestfield District Centre adjacent to the Reserve and the use levels rise (as predicted in the Shire's Community Facilitates Plan). Adjustment may be necessary to reflect new issues and Shire resources.

Recommendations

67. Undertake base-line studies of Reserve elements such as current user numbers and activities, wildlife diversity, weed infestations, water flows and water quality, tree health and numbers (Arboricultural surveys), and hours and manpower (budget) required to maintain the Reserve.
68. Repeat the above survey and review the management recommendations in this document approximately every 5 years.

04 LANDSCAPE PLAN



4.1 LANDSCAPE MANAGEMENT PLAN

The recommendations listed in this Management Plan, can be partly illustrated in a drawing for the Reserve.

The drawing is intended to act as a schematic summary for future developments to the Creek and Reserve, showing:

- broad brush planting zones;
- ideal locations for activity nodes;
- key connection points for pedestrian links;
- landscape treatments to assist with hydrology issues;
- infrastructure locations (bins, lights etc.), and
- emergency and maintenance access routes.

The Plan can be used to:

- inform adjacent land owners of the enhancements proposed;
- provide an illustrated summary of The Management Plan so that the community can better understand recommendations;
- act as a brief for more detailed concept design drawings, and
- inform other studies and proposals.

The Management Plan drawing is based on the Hydrological Survey preliminary design plan bases.

The plan following has been reduced to A3 from the A0 original.

Management Vision

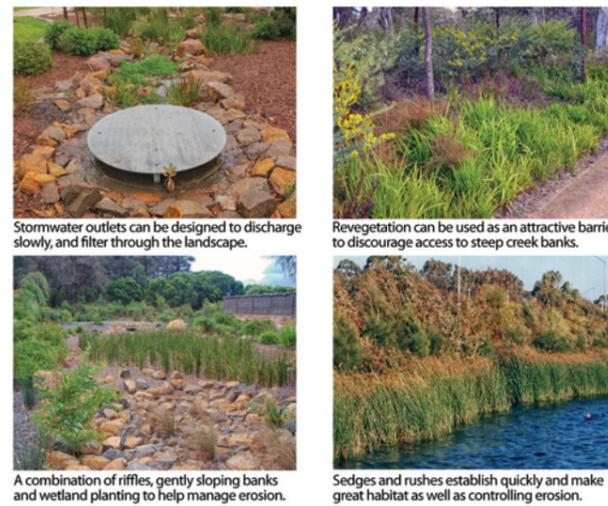
The Shire of Kalamunda has commissioned this Landscape Management Plan to help achieve the following vision:

"For the Woodlupine Creek to become a significant high amenity focal point for the community."

In order to achieve the Vision, five key actions need to be taken:

- ~ Address issues affecting the Creek and its reserve including storm water management in public and private lots, water quality and creek line ecosystem integrity, and aesthetics;
- ~ Integrate waterway improvements with adjacent developments and provide design guidelines for open spaces, as well as adjacent new developments;
- ~ Develop a coordinated approach to the ongoing management of Woodlupine Creek and its Reserve between the Shire, Water Authority, adjacent landowners and community;
- ~ Increase the community's appreciation of the Creek, its vegetation and its associated open spaces for passive recreation purposes; and
- ~ Improve pedestrian and cyclist access and safety across and along the creek line.

The Landscape Management Plan drawing should be read in conjunction with the full management report, the Forrestfield District Centre Structure Plan, the Woodlupine Creek Hydrological Survey and Forrestfield District Centre Urban Design Guidelines.



Stormwater outlets can be designed to discharge slowly, and filter through the landscape.

Revegetation can be used as an attractive barrier to discourage access to steep creek banks.

A combination of riffles, gently sloping banks and wetland planting to help manage erosion.

Sedges and rushes establish quickly and make great habitat as well as controlling erosion.

Forrestfield District Centre (FDC)

FDC Zone Management

The Forrestfield District Centre zone will be managed as both a drainage reserve and an important recreation asset for the Centre. Enhanced pedestrian and cyclist access, recreation nodes and guidelines to encourage new developments to face the creek line will be implemented.

Pool style fence extended along the footpath at this location to prevent access down to the bridge underside and provide a barrier in front of steep banks.

Sitting wall refurbished as a 'winter sun trap' with steps down to a paved area. Shrub barrier planted to the south to discourage access to the steep creek bank.

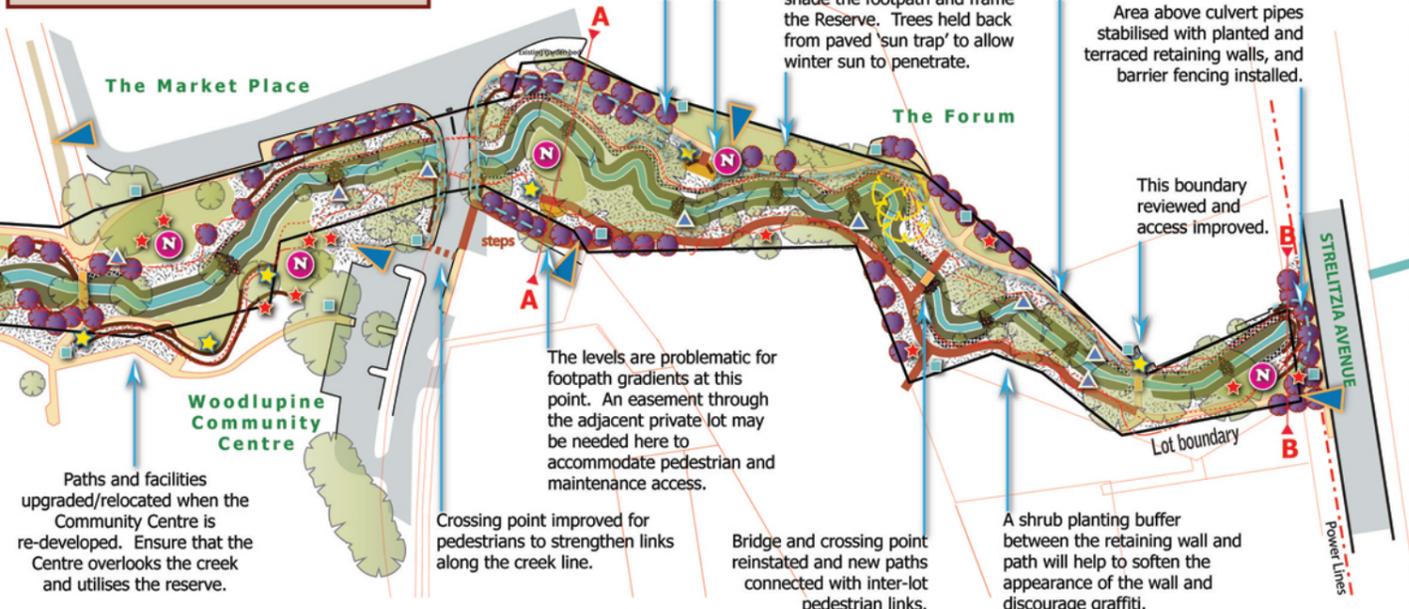
Post-and-wire fence installed adjacent to footpath to provide a barrier in front of steep creek bank.

New tree avenue planted to shade the footpath and frame the Reserve. Trees held back from paved 'sun trap' to allow winter sun to penetrate.

Area above culvert pipes stabilised with planted and terraced retaining walls, and barrier fencing installed.

This boundary reviewed and access improved.

A shrub planting buffer between the retaining wall and path will help to soften the appearance of the wall and discourage graffiti.



Residential Zone

Residential Zone Management

The management of Woodlupine Creek between Dawson Ave and Strelitzia Ave has been divided into two zones. The Residential zone will be managed primarily as a drainage reserve, with measures to manage flooding and enhance the natural qualities of the creek. Pedestrian and cyclist access will be retained, and access for maintenance improved.

'New Recreation Spaces' are proposed activity nodes in the Woodlupine Reserve that currently have a high degree of use (such as at the Community Centre), are in a location with a nice aspect that will provide amenity to users, or provide facilities for residents living in adjacent higher density developments.

The nodes are all located within the FDC Zone and could include a variety of infrastructure such as; picnic settings, shelters, solar lights, paved areas, interpretive signage and bins. Community art elements may also be appropriate.



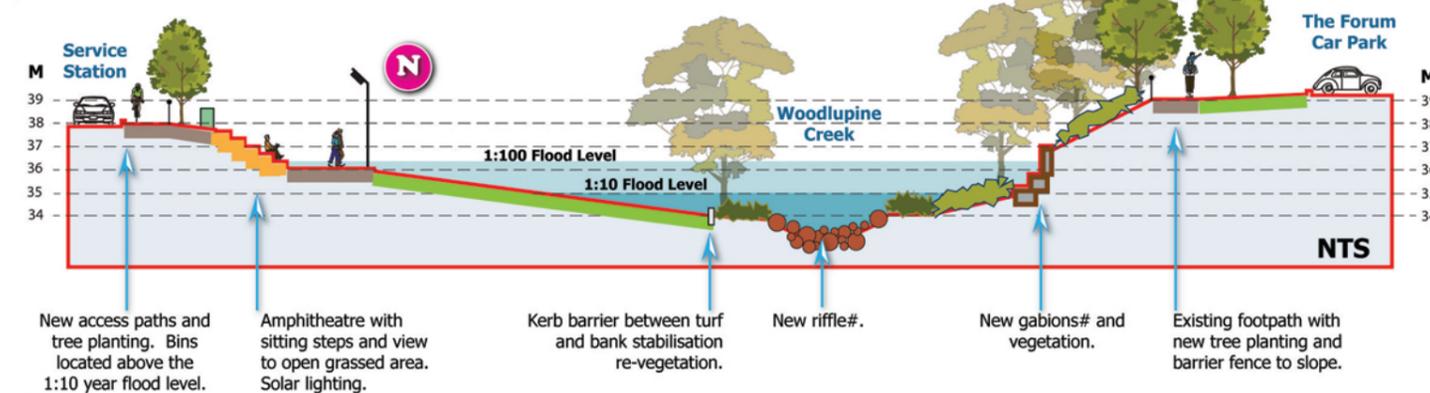
Nodes in high use areas, such as at the Community Centre, could include shelters.

The winding nature of the Creek could be interpreted in node infrastructure.

The topography in some nodes would lend itself to terracing and informal performance spaces.

'Pocket' nodes create intimate spaces for families; ensure view lines in and out are clear.

Section A ~ A



New access paths and tree planting. Bins located above the 1:10 year flood level.

Amphitheatre with sitting steps and view to open grassed area. Solar lighting.

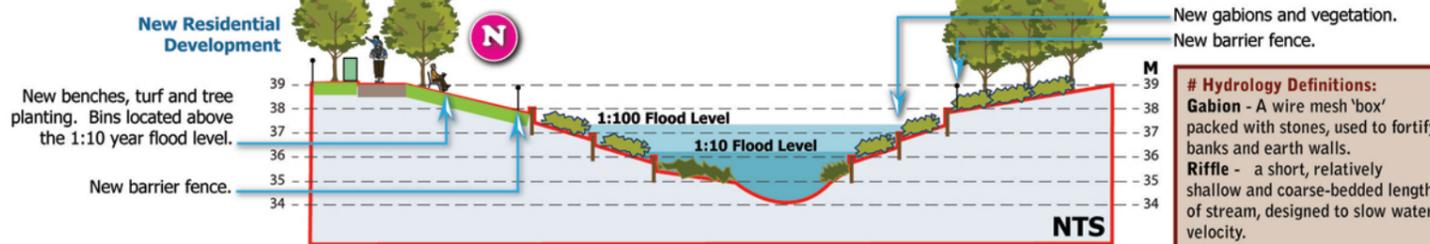
Kerb barrier between turf and bank stabilisation re-vegetation.

New riffle#.

New gabions# and vegetation.

Existing footpath with new tree planting and barrier fence to slope.

Section B ~ B



New benches, turf and tree planting. Bins located above the 1:10 year flood level.

New barrier fence.

New gabions and vegetation. New barrier fence.

Hydrology Definitions:
Gabion - A wire mesh 'box' packed with stones, used to fortify banks and earth walls.
Riffle - a short, relatively shallow and coarse-bedded length of stream, designed to slow water velocity.

LEGEND	
ROADS AND PATHS	STREET FURNITURE
Existing road and kerb	New seat
Existing footpath	New bin
New footpath (in-situ concrete)	New solar light
Pedestrian bridge	Fence
LANDSCAPE	SERVICES
Existing tree	Overhead power line
New tree	Existing drain outlet to creek
Tree to be removed	Access point for maintenance and emergencies
New turf with concrete edge	HYDROLOGY*
New bank stabilisation revegetation*	Adjusted creek line
New wetland revegetation*	New riffle#
New mulched area	Retaining gabion# walls to creek edge
Retaining wall	New 1:10 year flood line
Feature paving	New 1:100 year flood line
New Recreation Space	

*See Essential Environmental Hydrology Report 2014.
 # See box for right for terminology definitions.

4.2 TABLE OF RECOMMENDATIONS

Management for Recreation:

Adjacent to the Community Centre:

1. Install two picnic shelters, accessible to people in wheelchairs and families pushing prams. Fit these with timed lighting;
2. Construct appropriate linking footpaths and shared use paths – these need to allow for accessible grade routes to the picnic shelters;
3. Provide a small number of high quality benches (4 - 8) with backs and armrests close to paths and in a variety of summer shade / winter sun locations; and
4. Provide two bins (in enclosures) at path junctions, and above the 1:10 year flood line.

In the remainder of the Reserve:

5. Construct recreation nodes at intervals along the Reserve, these can include open grassed areas (with or without irrigation), shade tree planting and solar lighting if increased lighting levels are required to improve safety and security;
6. Install a combination of picnic platforms and benches at nodes along the Reserve;
7. Construct appropriate linking shared use paths (SUP) to create a circuit walk in the Reserve, and connect across Woodlupine Creek;
8. Review signage as enhancements are completed, so as to provide clear direction, management and interpretation signage;
9. Install distance markers along the SUP to allow walkers/runners to plan exercise routes; and
10. Provide dog waste bag dispensers and enclosed rubbish bins at the junctions of SUP and adjacent roads (4 – 6 bins and dispensers).

In the design brief for the new and improved building facilities:

11. Construct one of the toilets with an external door for reserve users. Ideally this toilet should have baby change facilities, be unisex and fully accessible. It should be locked overnight and located in an area with good passive surveillance and lighting;

12. Install bike racks and a drinking fountain adjacent to the building; and
13. Provide an outdoor BBQ area for community events overlooking the reserve.

Regarding access:

14. Review access to the edge of cliff drop-offs and manage with a combination of fencing and barrier planting. The review will need to be undertaken with hydrology works, and a variety of fencing options selected.
15. Provide access for a small Shire Parks and Gardens maintenance truck with a trafficable entry point at either end of the Reserve sections, and a 3m wide clear route following the Creek – this route may follow the SUP alignment.
16. Create a new maintenance access route from Magnolia Way elbow to the creekline to allow enhanced maintenance for water flows.
17. Locate bins where they can be accessed by the rubbish truck; i.e. adjacent to roads or where they can be easily wheeled to a truck.
18. Provide access for a small DFES fire unit with a trafficable entry point at either end of the Reserve sections, and a 3m wide clear route following the Creek – this route can share the maintenance access route.
19. Exclude un-authorised vehicles with the use of removable lockable bollards.

Regarding safety:

20. Apply CPTED principles to building and landscape design in the Reserve;
21. Schedule community activities and patrols within the Reserve, or overlooking the Reserve;
22. Avoid steep drop-offs into water, design the landscape to control access and provide small 'beach' areas for supervised water play;
23. Design infrastructure such as pipes and drop structures to discourage/prevent access; and
24. Ensure dwellings are not built in flood zones.

Regarding domestic animals:

25. Install “dogs on a leash” signage, and place dog waste disposal bags and bins at key points.
26. Consider designating one waterside area as a ‘dog beach’ so that dog paddling can be managed.
27. Consider designating a ‘free exercise zone’ in an adjacent large reserve in Forrestfield, so that dogs can be let off the leash in a controlled area.
28. Encourage cat owners to keep their cats indoors, or confined to their own garden.

Regarding community ownership:

29. Support increased activity within the Reserve.
30. Consider establishing a ‘Friends of’ group.
31. Consider an education programme (including water sensitive urban design), through interpretive signage, printed flyers, and / or ‘ranger’ nature walks.
32. Encourage new developments to face the Creek, and take advantage of its amenity.

Management for Natural Values:

Ecosystem management:

33. Manage the Creek and Reserve to improve ecosystem health.
34. Frame landscape improvement decisions within the role of the Reserve as part of a wildlife corridor.
35. Undertake revegetation and planting programmes which utilise plant species that provide nesting habitats, food and nectar, and protection for native birds and animals.
36. Undertake planting that helps to improve water quality in the Creek.
37. Undertake staged revegetation of the length of the creek reserve to eradicate weeds and weedy grasses.
38. Design gabions and creek bank retaining structures to accommodate vegetation, to naturalise their appearance and help with bank stabilization.
39. Utilise plants from the Southern River Plant Complex (as per APACE catalogues) for revegetation programmes to reinforce the original endemic plant communities.

Pest and disease management:

40. Manage animal pests by controlling domestic animals and removing feral pests.
41. Support research and monitoring programmes of pests in the area, and develop management practices based on findings.
42. Undertake a weed survey and develop a weed control plan (in coordination with WC) to manage weeds through mechanical, chemical or biological methods, being cognizant of the whole Woodlupine creek line system.
43. Avoid using weedy species in landscape designs, and never adjacent to the Creek - except in the case of turfed recreation nodes, and only where there is a barrier between the turf and revegetation.
44. Manage weed control so as not to have a negative impact on nesting birds and bank stability.
45. Practice dieback hygiene when moving soils in and out of the Reserve and when using machinery, and utilize dieback resistant plant species where possible.
46. Consider treating dieback infected trees where these trees are significant landscape features.
47. Educate local residents on the negative impacts of plant and animal pests and pathogens.

Fire risk management:

48. Manage fuel loads with regular mowing / slashing and removal of fallen branches.
49. Provide access for a small Fire and Emergency Services (DFES) fire truck via a trafficable entry point at either end of the Reserve sections, and a 3m wide clear route following the Creek – this route can follow the maintenance access route noted in 3.1.2;
50. Consider using fire retardant / resistant species (see Appendices) in the landscape adjacent to buildings;
51. Encourage early reporting by the community of fire through signage, and support of DFES initiatives;
52. Work with DFES to identify adjacent fire hydrants (provided for buildings), and determine if these could also service the Reserve;

53. Do not install 'wheely' bins in remote of bushy areas in the Reserve (risk of arson), locate these adjacent to footpath entry points to the Reserve.
54. Encourage adjacent property owners and tenants to manage their rubbish and landscapes so as to reduce fire risk.

Management for Water Flows

55. Design landscape and revegetation treatments at local drainage outlets to slow water flows, reduce erosion and improve water quality.

Management for Maintenance Efficiency

56. Provide access for a small landscape maintenance utility / truck via a trafficable entry point at either end of the Reserve sections, and a 3m wide clear route following the Creek – this route could follow the SUP route;
57. Restrict high maintenance gardens (such as flower beds) to high use, highly visible areas, and keep their size modest;
58. Insure all new trees are planted a minimum of 2m from concrete paths and road infrastructure;
59. Mulch around the base of trees in turfed areas to improve tree health and exclude grass from trunk areas;
60. Provide a concrete kerb edge or wide mulch band between turfed areas and revegetation to allow a spray edge to control weedy incursion;
61. Restrict irrigated mown turf areas to high use nodes, and maintain the remainder of grassed areas as dry grown and slashed until they can be revegetated with native species;
62. Where irrigation is used, design as subsurface and as 'vandal-proof' as practicable;
63. Develop a maintenance schedule to allow regular checking of infrastructure so that minor damage can be repaired before it becomes major, and to discourage vandalism (see CPTED Principles);
64. Locate bins where they can be accessed by the Shire rubbish truck; and

65. Encourage adjacent residents to take ownership of the Reserve and assist in its care by not dumping garden waste, picking up litter and reporting damage and vandalism.

Management for Development

66. Prepare a Local Planning Policy incorporating the Urban Design Guidelines, and adopt this policy under the Shire's Local Planning Scheme.

Monitoring and Review

67. Undertake base-line studies of Reserve elements such as current user numbers and activities, wildlife diversity, weed infestations, water flows and water quality, tree health and numbers (Arboricultural surveys), and hours and manpower (budget) required to maintain the Reserve.
68. Repeat the above survey and review the management recommendations in this document approximately every 5 years.

05 APPENDICES

URBAN DESIGN GUIDELINES;

For new development adjacent to the Woodlupine Creek Reserve within the area covered by the adopted Forrestfield District Centre Structure Plan (2012) [FDCSP]

GOAL:

To conserve and enhance the aesthetic, environmental and recreational value of the Woodlupine Creek Reserve by ensuring that new development located along its edges respects the character, amenity and values of the Creek environs. Development adjacent to the Creek should be of a high design quality, and seek to retain and enhance the Creek's unique contributions to both the surrounding urban environment, as well as the wider biological community.

APPLICABILITY:

These guidelines apply to all proposed new development – residential and commercial - on properties abutting the Woodlupine Creek Reserve located within the area the subject of the FDCSP.

Some of these properties are identified as “opportunity sites” under the FDCSP. Other properties are currently underdeveloped, and likely to be redeveloped over the coming years.

OBJECTIVES:

- To provide for a consistent and co-ordinated planning approach to protect, maintain and enhance the natural, landscape, cultural and built character of Woodlupine Creek;
- To encourage development along the Creek edges that treats the Creek Reserve as a place of valuable open space amenity;
- To ensure that new development and its interface with the Creek Reserve is of a good quality, and contributes positively to the desired character of the Woodlupine Creek Reserve;
- To create an environment which encourages quality development and redevelopment adjacent to the Creek Reserve, and to provide the design framework for public and private development decisions;
- To encourage increased public usage and appreciation of the Creek Reserve and its amenities;

- To ensure that new edging development is designed in a manner which assists in improving the safety and security of Creek Reserve users; and
- To prevent new edging development from causing contamination, sedimentation, increased flood risk and bank erosion of the Creek.

DEVELOPMENT GUIDELINES:

These guidelines are to be used as a development control tool for assessing and guiding new development proposed for sites located adjacent to the Woodlupine Creek Reserve.

Creek Interface:

- New development should regard the adjacent Creek Reserve as an asset to be taken advantage of in terms of aspect and access;
- The scale, massing and articulation of structures to be located adjacent to the Creek Reserve should provide a visually compatible transition and linkage between the Creek Reserve and its immediate surrounds;
- The height of buildings on the property perimeter should be stepped down as they approach the Creek Reserve interface. Taller buildings and portions of buildings should be located further from the interface;
- The design and siting of buildings should help reduce perceptions of overall mass, and contribute to a human scale of development. Large expanses of blank facades to the Creek Reserve are to be avoided. The overall visual impact of buildings facing the Creek Reserve should be reduced through the use of such techniques as:
 - including windows overlooking the Creek Reserve wherever possible,
 - using more than one texture and/or colour on the facades,
 - using muted building materials and colours,
 - using articulated facades and roofing designs, and
 - employing projections and indentations within the building elevations.
- The design of buildings and building facades located on the edge of the Creek Reserve should be of a high quality, and of a standard similar to that which is applied to any main street frontage;
- Building materials and colours should reflect the natural setting of the Creek and its immediate environs.

Site Works:

- Significant earth works abutting the Creek Reserve are to be avoided, and cut-and-fill shall be minimised.
- Integral to this requirement is the need to keep retaining walls located on the Creek Reserve boundary to the minimum height practicable.
- All developments and works should avoid disturbance of any natural features, landforms or mature vegetation.

Siting of Development:

- The siting of any new development, including buildings, retaining walls, fences, car parks and supporting infrastructure, must take into consideration the identified Woodlupine Creek flood plains (1:10 and 1:100 year events) and the associated risks of developing within those flood plains.

Orientation:

- New development shall orientate buildings, windows, balconies, decks and outdoor spaces to take advantage of views towards the Creek Reserve and to treat the Reserve as a park-like frontage. Development shall not “turn its back” on the Reserve;
- Service and loading areas, and structures such as mechanical equipment and rubbish collection receptacles, should be located so as not to be visible from the Creek Reserve; and where visible as a consequence of lot configuration and/or topography of the land, should be appropriately screened.

Setbacks from the Creek Reserve:

- All new buildings should ideally be set back from the Creek Reserve boundary a sufficient distance to allow the setback area to be designated as usable open space directly associated with the building. A minimum of 3m would be desirable. The Shire will have due regard to comments from the DoW when determining proposed development setback less than 3m from the reserve.

Implementation of CPTED¹⁰ Principles:

New development shall:

- Provide good passive surveillance and overlooking of the Creek Reserve through appropriate location of windows, balconies, terraces, decks and other outdoor spaces, and the use of visually permeable perimeter fencing;
- Ensure no items stored adjacent to the reserve boundary are stacked to a vertical height exceeding 3m;
- Be well lit; and

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Crime Prevention Through Environmental Design

- Use materials for retaining walls and fences that are vandal-proof, and have surfaces that resist graffiti (mid-tone, rough surface finish).

Creek Reserve Edge Treatments - Retaining Walls and Fencing:

- Fencing along the edge of the Creek Reserve shall be of a high standard and constructed in materials that complement the materials and colours of the adjoining buildings;
- Fencing shall be a minimum of 50% open or transparent in form for any one straight length. The fencing should be appropriate in its form, materials and colours to the landscape setting of the Creek Reserve, and provide opportunities for visual interaction and views over and along the Reserve. (Consideration may be afforded within this guiding principle to accommodate site-specific privacy requirements for adjacent land owners.)
- Appropriate fencing materials along the Creek Reserve boundary are:
 - Steel or timber pickets,
 - Masonry piers with steel or timber picket in fills,
 - Timberlap (painted and anti-graffiti coated),
 - Rendered masonry (painted and anti-graffiti coated),
 - Brush fencing.
- Steel sheeting (Colorbond) and fibro cement “Super Six” sheeting are inappropriate fencing materials for use along the Creek Reserve boundary.
- Fencing should be carefully considered for its safety as well as its visual qualities. High fences (higher than 1.8m above natural ground level) should be located and designed to make them appear lower than they are, in order to maintain a human scale to the Creek Reserve edge.
- Retaining walls shall be minimised in height as far as practicable to maintain a human scale to the Creek Reserve edge. Retaining walls should be no higher than 1.2m at any one point, and if retaining walls are terraced, landscaping must be provided and maintained along each level.
- Appropriate building materials for retaining walls along the Creek Reserve boundary are:
 - Rammed (local) earth,
 - Local stone,
 - Rough-finished concrete in local earth colours,

- Earth-coloured or painted brickwork.
- No advertising/ signage is to be attached to and/ or painted on fencing visible from the Reserve.

Car Parking Areas:

- Development should minimise impervious surfaces on the site by keeping sealed driveways and parking areas to a minimum (within the established parameters of statutory planning and development controls);
- Development should provide tree planting and incorporate 1 shade tree for every 4 bays as a minimum.

Landscaping and Stormwater Retention:

- New development must maximise opportunities for on-site stormwater retention and infiltration. Site surfaces should be graded to drain towards vegetated swales, permeable paving, or infiltration trenches;
- New developments should use plantings that require minimal water. Pesticide use should be kept to a minimum;
- Trees, shrubs and groundcovers as recommended in the associated “Woodlupine Creek Management Plan” should be used in the landscaping of all new developments abutting the Creek Reserve;
- Planting of a landscaped strip in the 3m setback abutting the Reserve is encouraged, so as to integrate the Reserve with private lots;
- All existing, mature native/indigenous trees on-site shall be retained if practicable. Building and circulation layouts should accommodate existing, mature native/indigenous trees and incorporate them into the design of the site. Removal of any such trees will only be authorised by the Shire of Kalamunda in exceptional circumstances.
- Landscape design, revegetation works, groundwater/ stormwater design and earthworks should aim to limit any adverse impacts on water run-off, weed invasion, exotic species introduction and land erosion.

Water Sensitive Urban Design

Water-sensitive urban design (WSUD) is a land planning and engineering design approach which integrates the urban water cycle, including stormwater, groundwater and wastewater management and water supply, into urban design to minimise environmental degradation and improve aesthetic and recreational appeal.

New developments and redevelopments of existing buildings should result in the removal of existing ‘local drain’ discharge pipes from

private lots into Woodlupine Creek, and include the implementation of water sensitive urban design principles which would aim to achieve the following objectives:

- Minimise the use of drinking water;
- Maximise opportunities for use and reuse of alternative water sources;
- Mimic the natural hydrology of the site;
- Minimise the use of fertilisers and irrigation, and
- Manage stormwater runoff to prevent damage to property and the Creek Reserve.

In addition, commercial and light industrial developments and redevelopments in the catchment should be designed to prevent pollutants from leaving the site and entering the downstream environment through the use of:

- On-site infiltration measures (soakwells);
- Bioretention swales and buffer strips;
- Gross pollutant traps;
- Bunded storage areas, washdown bays and internal areas, and
- Wastewater treatment systems.

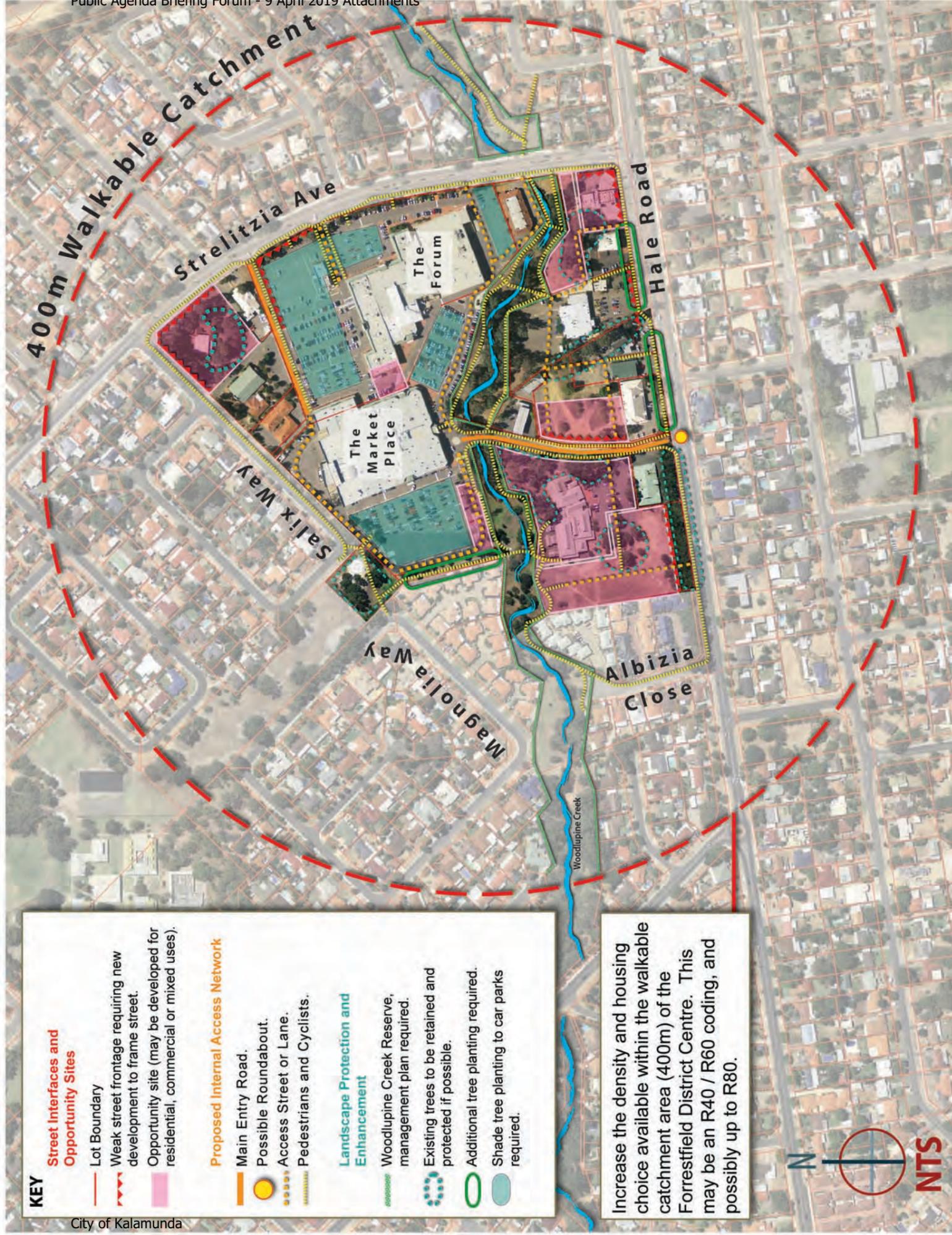
Access and Connections to the Creek Reserve:

- Pedestrian connections should be made between adjacent parcels of land to the shared use paths alongside the Creek at frequent locations to ensure safe and easy access; and
- Pedestrian connections directly linking individual developments to the shared use paths within the Creek Reserve should be provided where safe and desirable to do so.
- Vehicle connections (access streets or lanes) should be provided generally in accordance with those illustrated in the adopted Forrestfield District Centre Structure Plan.

Land Uses:

- Permissible and preferred land uses are determined by reference to the prevailing Shire of Kalamunda Local Planning Scheme, and the Forrestfield District Centre Structure Plan.

FORRESTFIELD DISTRICT CENTRE STRUCTURE PLAN 2012



City of Kalamunda

PRIORITY ACTIONS FOR THE SHIRE OF KALAMUNDA:

- ~ Advertise the Structure Plan prior to final adjustments and adoption by Council. Ensure each landowner is aware of their responsibilities in regard to new development/redevelopment when the Structure Plan is adopted;
- ~ Prepare and adopt a management plan for Woodlupine Creek and allocate funds to address pressing issues of erosion and public access;
- ~ Finalise comprehensive site planning for the redevelopment of Lot 106, making provision for the new medium-density housing development, additional commercial development, improvements to the Community Centre building and surrounds, inclusion of the proposed new library building, and possible inclusion of a Shire "shop front" office;
- ~ Undertake a lighting and vegetation inventory of the area covered by the Structure Plan;
- ~ Initiate steps to bring the private road off Hale Road into Shire ownership;
- ~ Research and prepare a Local Housing Strategy for the entire Shire, and apply any relevant resultant recommendations to the walkable catchment area (400m) of the Forrestfield District Centre (this may be an R40/60 coding, and possibly up to R80); and
- ~ Initiate talks with TransPerth to discuss the potential for improving the bus service to/from the Forrestfield District Centre.



Provide significant shade tree plantings to large car parks.



Manage Woodlupine Creek to prevent erosion and address public access issues.

Summary of Additional Actions – Both General and Specific:

LAND USE & ACTIVITIES:

- ~ Promote a broader mix of land uses within the Centre, especially offices, health-related uses, cultural and entertainment uses, community facilities and higher density residential uses. A cinema and a small bar or two would be beneficial. Uses which operate during evenings should be particularly encouraged.
- ~ Promote the development of more al fresco dining opportunities associated with existing and new restaurants and cafes.
- ~ Ensure any new major development of a commercial nature proposed for the Centre is supported by a Retail Sustainability/Needs Assessment Study.

MOVEMENT NETWORK:

- ~ Upgrade and extend the internal road and pedestrian/bike pathway system;
- ~ Upgrade the main vehicle accessways into and through the land occupied by the two major shopping centres.
- ~ Ensure any new major development of a commercial nature proposed for the Centre is supported by a detailed traffic assessment.
- ~ Ensure all new commercial servicing arrangements are carried out behind or to the side of premises, and strictly segregated from shoppers and other visitors to the Centre.
- ~ Carry out an inventory of all existing parking bays within the Centre, with a view to setting revised car parking requirements for existing and new developments.
- ~ Improve infrastructure (bus shelters, lighting, paving and access) which supports the bus service.
- ~ Investigate the opportunity for development of a new roundabout on Hale Road.

BUILT FORM & URBAN DESIGN:

- ~ The Shire to encourage or mandate improved built form and urban design principles for new developments, and for alterations/extensions to existing developments.



Initiate steps to bring the private road off Hale Road into Shire ownership, and upgrade.

PUBLIC SPACES:

- ~ The Shire to work both independently and with private landowners to protect and improve public spaces and publicly-accessible open spaces, and to create new, small open spaces and public facilities wherever these opportunities arise.
- ~ Existing stands of mature trees should be retained and protected wherever possible.
- ~ A consistent approach to landscaping should be adopted throughout the Centre, and large open car parks provided with significant shade tree plantings. A palette of appropriate waterwise plants and shade trees should be developed by the Shire.
- ~ The Shire to investigate whether any conditions have been attached previously to the formal approvals for the two large supermarket developments in relation to landscaping of the car parks, and if so, to enforce those conditions.

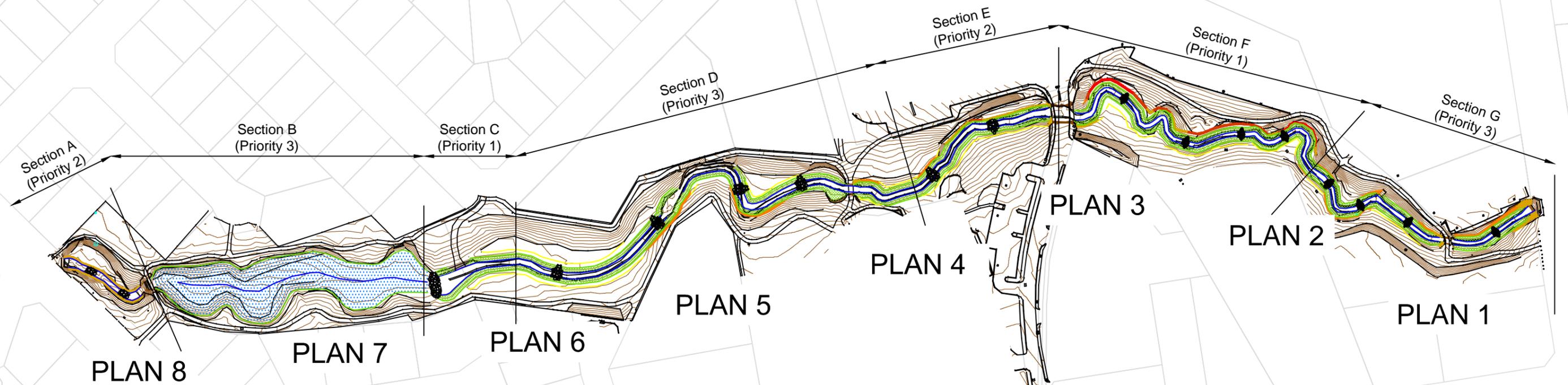
RESOURCE CONSERVATION:

- ~ The Shire to insist upon the highest standards of energy and water conservation in new developments, and to encourage the conservation and re-use of materials, and a reduction in the need for excessive cut and fill associated with new developments.



Encourage high quality development of "Opportunity Sites".

**HYDROLOGY SURVEY
PRELIMINARY DESIGN PLAN INDEX**



LEGEND

- Existing features
- Design contours (0.25m)
- Cut interface
- Top of Channel
- Base of Channel
- Bank stabilisation / reveg
- Seasonal inundation / pond
- ⊗ Riffle
- Retaining, Terracing or Gabion Walls
- 0 m to 1 m
- 1 m to 2 m
- 2 m to 3 m
- 3 m to 4 m

Shire of Kalamunda - Woodlupine Brook Preliminary Design - Plan Index

ISSUE	DATE	DESIGN	CHECK
B	25 Nov 2014	KN	HB

DATA SOURCES Landgate Dept of Planning	A3 SCALE 1:2000 0 20 40m Projection: MGA50 Datum: AHD
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PLANT LISTS

Potential Aquatic and Wetland Weed Species¹¹

A list of aquatic wetland weeds in southern Western Australia:

Common Name	Botanical Name
Alligator weed*	Alternanthera philoxeroides
Arrow head*	Sagittaria montevidensis
Bulrush	Typha orientalis
Fanwort	Cabomba caroliniana
Hydrocotyl or Water pennywort*	Hydrocotyle ranunculoides, H. verticillata
Lagarosiphon*	Lagarosiphon spp.
Leafy elodea*	Egeria densa
Parrot's feather*	Myriophyllum aquaticum
Sagittaria*	Sagittaria platyphylla
Salvinia*	Salvinia molesta
Strap weed	Vallisneria americana
Water hyacinth*	Eichhornia crassipes
Water lettuce*	Pistia stratiotes

Suitable plant species for the Reserve are listed on the APACE catalogue site, see www.apace.org.au

and search;

Southern River Complex.

Or

Refer to the Hydrological Survey (Essential Environmental 2014) Appendix B Revegetation Recommendations for a list of suggested plants.

A list of common wetland weeds in southern Western Australia:

Common Name	Botanical Name
Trees	
Acacia longifolia	Acacia longifolia
Cape lilac	Melia azedarach
Castor oil bush	Ricinus communis
Coral tree	Erythrina spp.
Edible fig	Ficus carica
Japanese pepper	Schinus terebinthifolia
Olive tree	Olea europaea
Poplars	Populus spp.
Tea tree	Leptospermum laevigatum
Tree lucerne	Cytisus proliferus
Willow tree	Salix babylonica

Grasses

(annual, perennial and giant) and other weeds

African love grass	Eragrostis curvula
Annual veldt grass	Ehrharta longiflora
Bamboo	Bambusa spp.
Barbgrass	Parapholis incurva
Buffalo grass	Stenotaphrum secundatum
Couch	Cynodon dactylon
Fountain grass	Pennisetum setaceum
Giant reed	Arundo donax
Paspalum	Paspalum dilatatum
Great brome	Bromus diandrus
Kikuyu	Pennisetum clandestinum
Lupins	Lupinus spp.
Pampus grass	Cortaderia selloana
Quaking grass	Briza maxima

¹¹ Lists from the Water and Rivers Commission

Common Name	Botanical Name
Shivery grass	Briza minor
Sweet vernal grass	Anthoxanthum odoratum
Perennial veldt grass	Ehrharta calycina
Wildoats	Avena fatua, A. barbata
Yorkshire fog	Holcus lanatus
<i>Tall herbs & bulbs</i>	
Arum lily*	Zantedeschia aethiopica
Canna lily	Canna spp.
Flat sedge	Cyperus congestus, C. eragrostis
Harlequin flower	Sparaxis bulbifera
Docks	Rumex spp.
Watsonia	Watsonia spp.
<i>Weeds and salinization</i>	
Atriplex/creeping saltbush	Atriplex prostrata
Barley grass	Hordeum leporinum
Bearded grass	Polypogon monspeliensis
Rye grass	Lolium spp.
Wild aster	Aster subulatus
Sharp rush	Juncus acutus
Saltwater water couch	Paspalum vaginatum
<i>Annuals</i>	
Flaxleaf fleabane	Conyza bonariensis
<i>Vines and creepers</i>	
Blackberry*	Rubus spp.
Blue periwinkle	Vinca major
Bridal creeper	Myrsiphyllum asparagoides
Common lantana	Lantana camara
Dolichos pea	Dipogon lignosus
Japanese honeysuckle	Lonicera japonica
Morning glory	Ipomoea indica, I. Caricia

* ***Declared plants in Western Australia***

Fire Resistant Trees

In general terms, the most 'fire-resistant trees are exotic species.

The following list of trees that are hard to burn is taken from the City of Armadale guide: 'Selecting plants for a more fire-retardant garden' March 2011. Further advice is also available from FESA and the Small Tree Farm in Ballingup.

Latin name	Common Name
Trees:	
<i>Acer trifidum</i>	Trident Maple
<i>Acmena smithii</i>	Lilly Pilly
<i>Cercis siliquastrum</i>	Judas Tree
<i>Crataegus phaenopyrum</i>	Washington Thorn
<i>Fraxinus Oxycarpa 'Raywood'</i>	Claret Ash
<i>Fraxinus velutina</i>	Velvet Ash
<i>Hymenosporum flavum</i>	Native Frangipani
<i>Largestromia indica</i>	Crepe Myrtle
<i>Liquidambar styraciflua</i>	Liquidambar
<i>Morus alba</i>	Mulberry
<i>Nyssa sylvatica</i>	Tupelo
<i>Paulownia fortunei</i>	Paulownia
<i>Pyrus ussurensis</i>	Manchurian Pear
<i>Pyrus calleryana 'Glenn's Form'</i>	Glenn's Form Pear
<i>Quercus robur</i>	English Oak
<i>Quercus phellos</i>	Willow Oak
<i>Ulmus chinensis</i>	Chinese Elm

Woodlupine Creek Hydrology study

Prepared for Shire of Kalamunda

By Essential
Environmental

August 2014



essential 
environmental

Woodlupine Creek – Hydrology study

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EXECUTIVE SUMMARY

The *Forrestfield District Centre Structure Plan* (adopted 2012) identified a number of priority actions for the structure plan area including to “Prepare and adopt a management plan for the Woodlupine Creek and allocate funds to address pressing issues of erosion and public access.”

Woodlupine Creek, gazetted as a Water Corporation Main Drain, is currently degraded but with appropriate remediation works and improved future management it has the potential to become a significant high amenity focal point for the community.

This hydrology report provides technical support to the *Woodlupine Creek in Forrestfield District Centre Landscape Management Plan* (In prep) and establishes a proposed conceptual design for remedial works within the foreshore to improve bed and bank stability, manage local drainage discharges and facilitate an improved landscape and public open space outcome for the community.

Woodlupine Creek – “a significant high amenity focal point for the community”



The most significant issue to be resolved along the creek is bank erosion. The creek flows at high velocities through the area and this has resulted in extensive erosion of the outer banks of several meanders. To resolve this issue, it will be necessary to undertake works to stabilise the bed and banks of the creek and reduce stream velocities.

In the steepest and most severely eroded sections of the creek, erosion has led to several trees being significantly undercut to the extent that they represent a significant danger to the public and will most likely require removal.

A concept has been developed which illustrates the extent of works required to reconstruct the bed and banks of the stream and provide a cross section that will limit velocities and associated potential for erosion. Implementation of the concept design throughout the study area may not be practical due to resource constraints. Therefore, the design which is presented could be considered an “ultimate” scenario which can be progressively implemented and/or modified locally. The priority for reconstruction should follow the severity of existing erosion.

Woodlupine Creek – Hydrology study

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Woodlupine Creek – Hydrology study

1 INTRODUCTION

The Woodlupine Creek within the Forrestfield District Centre is gazetted as a Main Drain and is a part of the Water Corporations main drainage system, which terminates a short distance upstream of the study area at Hale Road.

The *Forrestfield District Centre Structure Plan* (adopted 2012) identified a number of priority actions for the structure plan area including to “Prepare and adopt a management plan for the Woodlupine Creek and allocate funds to address pressing issues of erosion and public access.”

Although the Creek is currently degraded, with appropriate remediation works and improved future management, it has the potential to become a significant high amenity focal point for the community.

This hydrology report provides technical support to the *Woodlupine Creek in Forrestfield District Centre Landscape Management Plan* (In prep) and establishes a proposed conceptual design for remedial works within the foreshore to improve bed and bank stability, manage local drainage discharges and facilitate an improved landscape and public open space outcome for the community.

Woodlupine Creek – “a significant high amenity focal point for the community”



1.1 Subject area

The subject area for this study is the section of Woodlupine Creek between Strelitzia Avenue and Dawson Avenue in Forrestfield, comprising part of the Forrestfield District Shopping Centre (Figure 1).

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Figure 1 - Location plan



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2 BACKGROUND AND CONTEXT

The *Forrestfield District Centre Structure Plan* (adopted 2012) identified a number of priority actions for the structure plan area including to “Prepare and adopt a management plan for the Woodlupine Creek and allocate funds to address pressing issues of erosion and public access.”

In response, the Shire of Kalamunda is in the process of developing a management plan for the section of Woodlupine Brook between Strelitzia Avenue and Dawson Avenue in Forrestfield, comprising part of the Forrestfield District Shopping Centre.



Plate 1: Woodlupine Creek in Forrestfield District Centre

This section of Woodlupine Creek is located in a developed area close to the Darling Scarp and as is characterised by high velocity seasonal peak flows. The main channel meanders through an area of public open space and ultimately broadens out into a pond (online detention area) immediately upstream of a weir structure close to Dawson Avenue.

2.1 Soils and foreshore condition

The soils of the bed, banks and floodplain are typically clay although there are areas of deposited sand within the main channel of the brook. There are existing concrete and rock pitched reinforcements along some sections of the brook although they are generally quite poorly maintained and in some cases are significantly eroded. There is evidence of a former crossing which now forms a minor concrete and rock riffle structure (Plate 2).



Plate 2: Evidence of erosion and damaged structures in Woodlupine Creek

Woodlupine Creek – Hydrology study

Some sections of the foreshore are quite badly degraded with significant erosion and extensive grass and other weeds present along the banks. Several mature trees and existing reinforcements are extensively undercut (Plate 3).



Plate 3: Evidence of weeds and undercut trees and reinforcements on Woodlupine Creek

2.2 Water Quality

Preliminary review of available water quality data (DoW and Water Corporation data collected between 2005 and 2011) suggests that the creek is fresh, generally of neutral pH with low to moderate total suspended solids and low concentrations of metals and other contaminants. Nutrient concentrations in the Brook are variable with the medians for both total nitrogen and total phosphorous just above ANZECC Freshwater guidelines for slightly to moderately disturbed ecosystems at 0.65 mg/L and 0.03 mg/L respectively.



Plate 4: Woodlupine Creek baseflow channel

Woodlupine Creek – Hydrology study

2.3 Hydrology

The catchment of the Woodlupine Creek is largely developed although there is a notable undeveloped section immediately upstream of the study area coinciding with the Darling Scarp. This section is very steep and leads to high velocity peak flows during and immediately following large storm events.

Average monthly flows in the creek have been previously estimated (Rockwater 2012) and are presented in table 1 below. These flow rates correspond to a long term average winter flow of approximately 130 L/s measured at a point approximately 1.5 km downstream of the study area.

Storm event peak flows and levels have also been previously estimated (Water Corporation 2008) and are presented in table 2 below.

The downstream section of the brook within the study area, upstream of Dawson Avenue is formed into online detention storage behind a weir structure (Plate 5).

Table 1: Average monthly flow rates (Source: Rockwater 2012)

Month	Long term monthly average		10 year monthly average	
	kL/day	Total kL	kL/day	Total kL
Jan	155	4,809	31	946
Feb	229	6,494	32	913
Mar	96	2,984	113	3,506
Apr	429	12,860	645	19,340
May	1,577	48,897	1,550	48,038
Jun	6,551	196,906	4,736	142,069
Jul	11,564	345,694	9,500	294,502
Aug	12,792	382,397	11,053	342,658
Sep	9,595	287,848	8,081	242,441
Oct	5,311	164,634	3,912	121,258
Nov	2,140	64,208	1,899	56,969
Dec	268	8,008	240	7,450
Annual	4,226	1,525,739	3,483	1,280,090

Table 2: Event peak water levels and flows (Source: Water Corporation 2008)

Location	10 year ARI event		100 year ARI event	
	m AHD	M ³ /s	m AHD	M ³ /s
Strelizia Ave	38.1	9.1	38.8	15.4
Dawson Avenue	32.0	9.2	32.2	13.8

Woodlupine Creek – Hydrology study



Plate 5: Dawson Avenue detention basin and weir

2.4 Local drainage

There are a significant number of local drainage discharges within the study area which are marked in Plate 6, these were identified during a site inspection and there may be additional local discharges.

Local discharges do not have a typical configuration and include many different materials, with some being simple PVC pipes emerging from the Brook’s banks and others incorporating grates and rock pitching (Plate 7).



Plate 6: Aerial image outlining locations of local drainage discharges



Plate 7: Various local drainage discharges to Woodlupine Creek

Woodlupine Creek – Hydrology study

2.5 Predicted flooding

The flood levels predicted by the Water Corporation were used in combination with recently obtained LiDAR topographic information to create preliminary flood mapping (Plate 8). To develop this mapping it was necessary to adjust the Water Corporations flood levels in some locations where the modelled invert levels did not correspond to the recorded LiDAR levels.



Plate 8: Preliminary flood level assessment

2.6 Survey

Upon review of LiDAR information and inspection of the site it was apparent that tree coverage prevented accurate delineation of ground conditions using remote sensing data. In order to facilitate development of a more detailed local hydraulic model of the site the Shire commissioned a feature survey of the Woodlupine Creek through the study area which is presented in Figure 2.

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Figure 2 - Survey detail



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3 BASIS OF DESIGN

A workshop was held with the Shire of Kalamunda and the project team. The purpose of this workshop was:

- To discuss the desired outcomes and objectives for the proposed redesign of the Woodlupine Brook.
- To discuss and agree a set of design criteria that will enable a design to be developed that can be supported by all parties.

The workshop was attended by the following officers of the Shire of Kalamunda and members of the project team:

- Nina Lytton (Shire of Kalamunda – Coordinator Strategic Planning)
- Andrew Fowler-Tutt (Shire of Kalamunda – Manager Development Services)
- Daniel Nelson (Shire of Kalamunda – Coordinator Project Delivery)
- Tamara Wilkes-Jones (Shire of Kalamunda – Coordinator Environmental Services)
- Chris Anthill (Planning and Urban Design)
- Sally Malone (Landscape Design)
- Helen Brookes (Essential Environmental – Principal Hydrologist)
- Kelly Norris (Essential Environmental – Senior Engineer)

3.1 Additional consultation

Following the workshop, the Water Corporation was provided with a short ‘basis of design’ report summarising the outcomes and seeking comment. The Water Corporation provided preliminary advice on their design requirements and committed to providing further advice following development of the conceptual designs.

3.2 Desired outcome

The desired outcome for the Woodlupine Brook was determined to be:

For the Woodlupine Creek to become “a significant high amenity focal point for the community”



Plate 9: Woodlupine Creek - “a significant high amenity focal point for the community”

Woodlupine Creek – Hydrology study

3.3 Objectives for the study

A range of objectives were discussed for the Woodlupine Brook re-design within three core themes. The objectives that are directly relevant to the hydrological study were determined to be:

- Access and amenity
 - Provide recreational opportunities
 - Integrate the creek within a linear public open space
 - Provide safe access for maintenance
 - Limit public interaction with deep/high velocity flows
- Protection of Infrastructure and Property
 - Provide protection from flood events
 - Maintain hydraulic function/performance
 - Management of bank stability and erosive flows
- Water Quality
 - Provide for interception/treatment of local discharges
 - Improve water quality and ecological function
 - Reduce potential for sediment mobilisation (erosion management)

Additional objectives were discussed which are more relevant to the subsequent landscape design but that will help to inform the hydraulic design process. These included:

- Use of materials
 - Natural materials were generally preferred to form pools and riffles
- Recreational focus
 - The eastern (upstream) end is considered a key opportunity for amenity
 - The existing informal path is to remain and could be extended
 - Additional crossing points (improved permeability) are desirable

It was also noted that the pond currently suffers from extensive Typha infestation and is thought to be considerably silted. To resolve this, consideration should be given to dredging the lake. This may also be beneficial in providing additional detention capacity.

3.4 Design Criteria

Preliminary design criteria were also discussed within each of the core themes and are presented below. It is recognised however, that these criteria will need to receive the support of the Water Corporation, whose representative was unfortunately unable to attend the workshop.

3.4.1 Access and amenity

1. Designs shall provide for a mixture of recreational opportunities within public open spaces surrounding the Woodlupine Brook.
2. Landscapes and infrastructure will be designed with consideration of appropriate episodic flooding.
3. Designs shall incorporate revegetation of riparian areas with locally native plant species.
4. Existing mature trees shall be retained wherever possible, the design of meanders shall aim to avoid trees that are selected for retention.
5. Landscape and design strategies shall be developed to limit public access to deep, fast flowing water where required.
6. Safe public access/egress points and safe maintenance access points shall be provided within the design.

Woodlupine Creek – Hydrology study

3.4.2 *Protection of Infrastructure and Property*

7. The existing baseflow channel shall be maintained where possible, integrating additional meanders, pools and riffles where desirable to satisfy other criteria
8. Existing invert levels and structures at up and downstream boundaries of the study area shall be maintained.
9. The existing hydraulic performance (peak flows and levels) for the 5 and 100 year ARI events shall be maintained.
10. The Brook cross section and longitudinal section will be designed to maintain flow velocities less than 1.2 m/s.
11. Bank slopes shall be designed to minimise scour and undercutting and enable revegetation.
12. Riffles, pools and meanders shall be incorporated to improve bank stability, provide detention capacity and reduce flow velocities.
13. Any structures within the Brook corridor shall be designed to avoid obstruction of flows during major flood events.

3.4.3 *Water Quality*

14. The design will aim to provide a minimum of 10 m of vegetated area to intercept and treat local drainage discharges before entry to the Brook.
15. Vegetation within the corridor will be restricted to evergreen locally native species to avoid excessive leaf litter collecting within the Brook.
16. Riffles, pools and meanders shall be incorporated to reduce sediment mobilisation and improve water quality and ecological function.

4 DETAILED HYDRAULIC MODELLING

A hydraulic model was developed in InfoWorks ICM which has the ability to simulate 2-dimensional hydraulics using an irregular triangular grid. For analysis at this site, a 2-dimensional model is considered superior to commonly used 1-dimensional alternatives because the simulation is able to provide site specific information on local flow directions and velocities expected to occur at the location of existing and proposed infrastructure. The use of an irregular triangular grid allows efficient representation of local topographical features in a manner far superior to that which could be applied using a rectangular grid which is common to other hydraulic modelling packages.

Remote sensing topographical data (LiDAR), site survey and aerial photography were used to develop the hydraulic model of the existing conditions throughout the study area. Key features identified by the site survey are captured in the model by identification of breaklines which facilitates a higher resolution of modelling cells to be established in and around those features. The existing road and foot bridges and the weir were represented explicitly (as lateral structures) within model; with levels of the road crest, bridge deck and under-bridge cross section taken from survey data. Figure 3 illustrates triangulation used in the hydraulic model for existing conditions overlaying topography and illustrating key features (breaklines).

The hydraulic grade line produced by the model along alignment of the river at the peak of the 10-year and 100-year ARI events is different to the previous analysis considered by the Water Corporation scheme review. The discrepancies are due to data limitations and assumptions in the previous modelling and the higher resolution analysis which has been undertaken as part of this study is considered to be more accurate. A comparison of predicted flood levels is presented in Table 3.

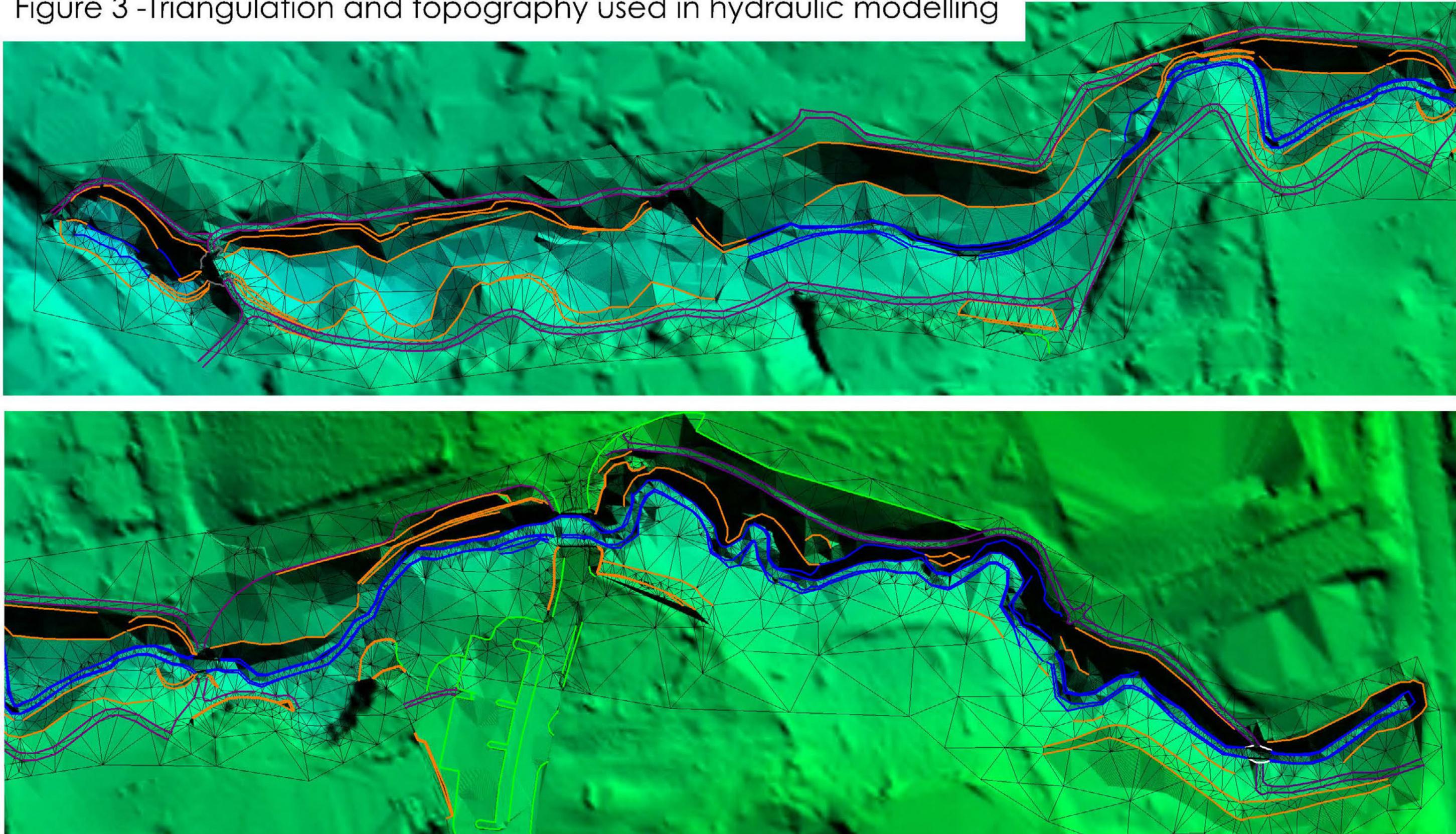
Figure 4, Figure 5 and Figure 6 illustrate the predicted extent of flooding and peak velocities expected to occur during the frequent (channel forming) winter flows, and during the predicted 10yr and 100yr ARI storm event.

Table 3: Predicted flood levels

Location	WC Scheme Review			Detailed hydraulic model		
	Invert	10yr	100yr	Invert	10yr	100yr
Strelitzia Ave (WBD059)	34.99	37.19	38.83	35.3	36.93	37.16
Shopping Rd (WBD054)	33.3	34.78	35.08	33.7	35.12	35.48
Footbridge (WBD053)	32.5	33.67	33.92	33.2	34.62	34.89
Detention Lake (ACCB)	31.09	32.27	32.80	31	33.64	33.76

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Figure 3 - Triangulation and topography used in hydraulic modelling



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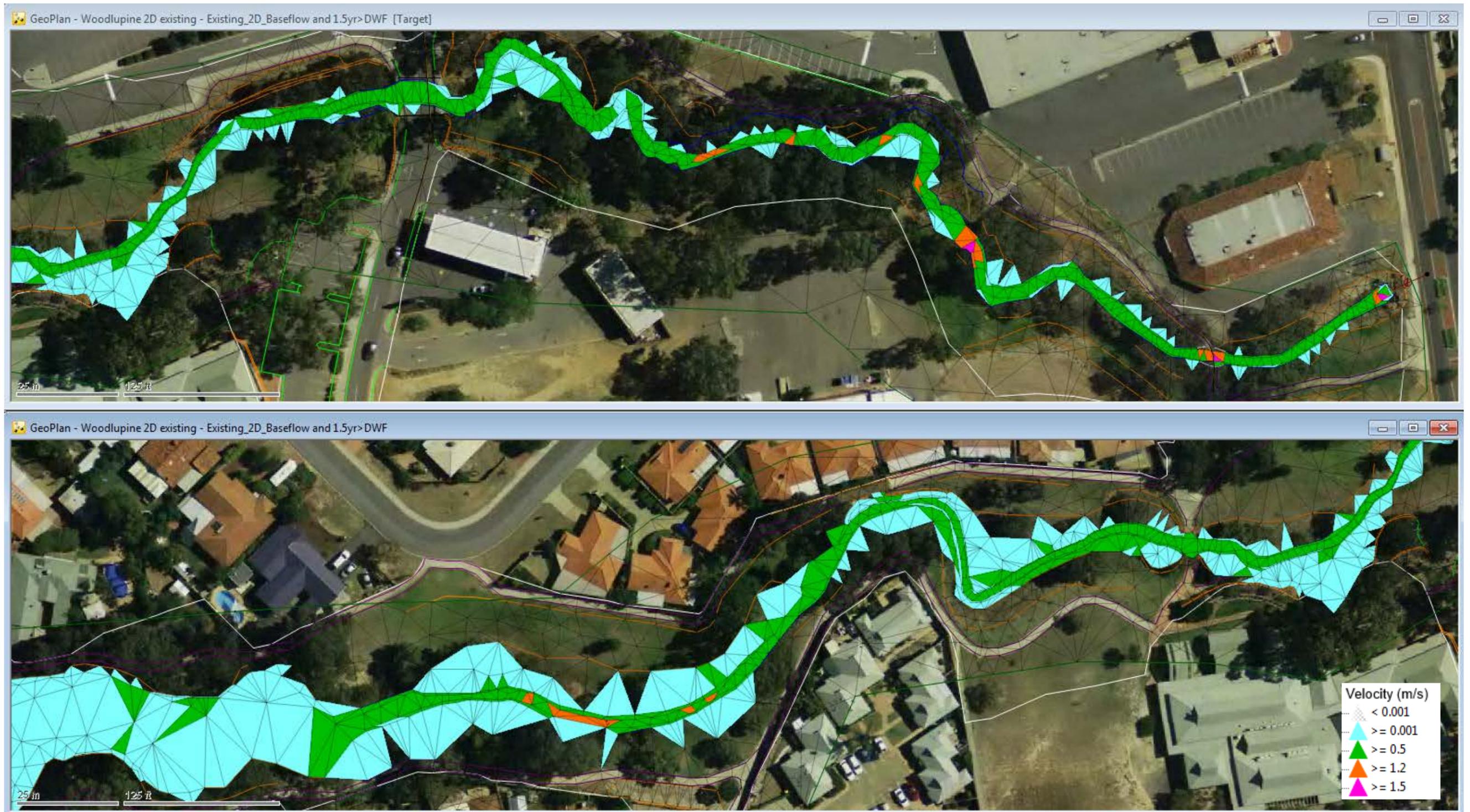


Figure 4: Existing extent of flooding and velocities expected for frequent event (2 m3/s)

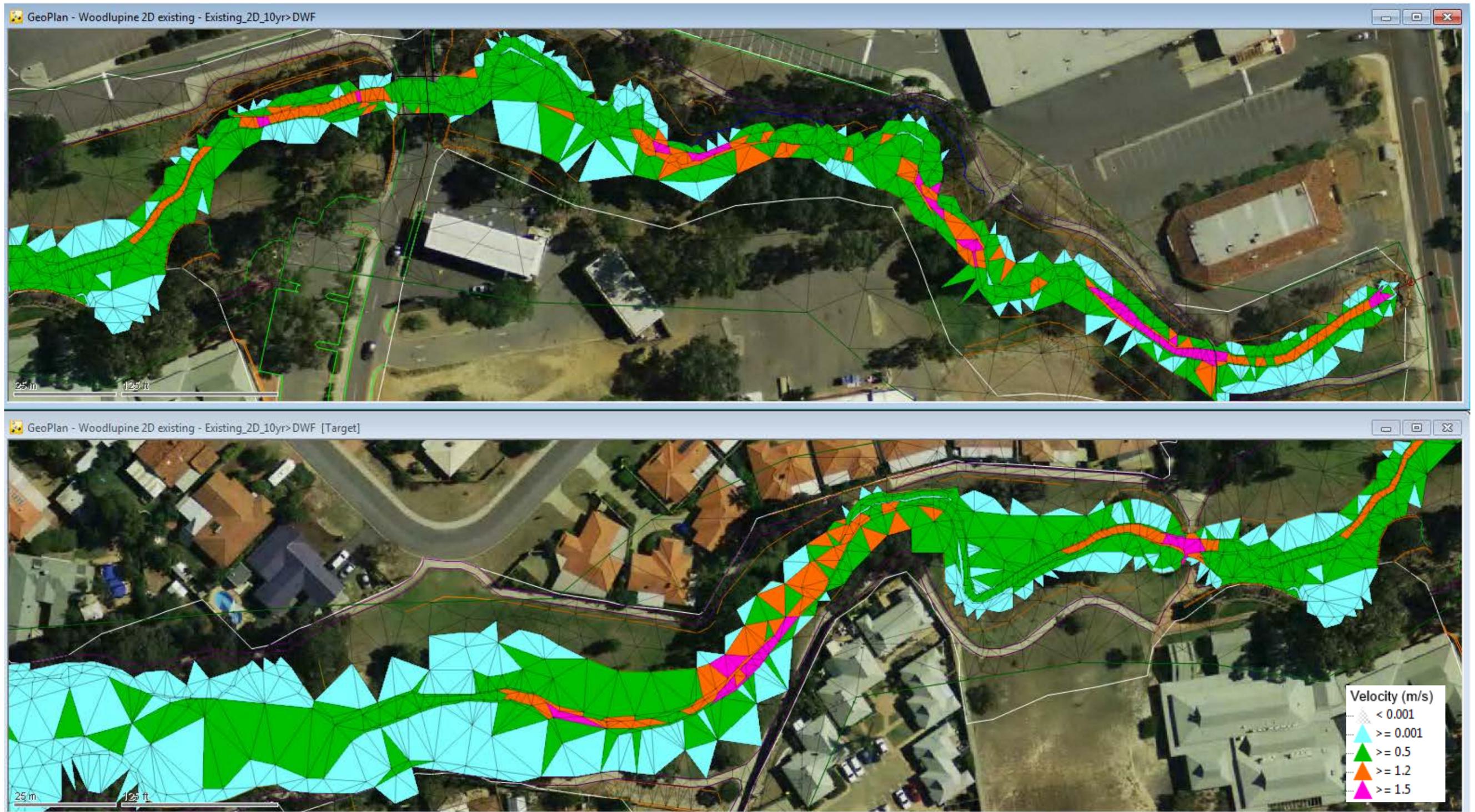


Figure 5: Existing extent of flooding and velocities expected for minor flood (10yr ARI)

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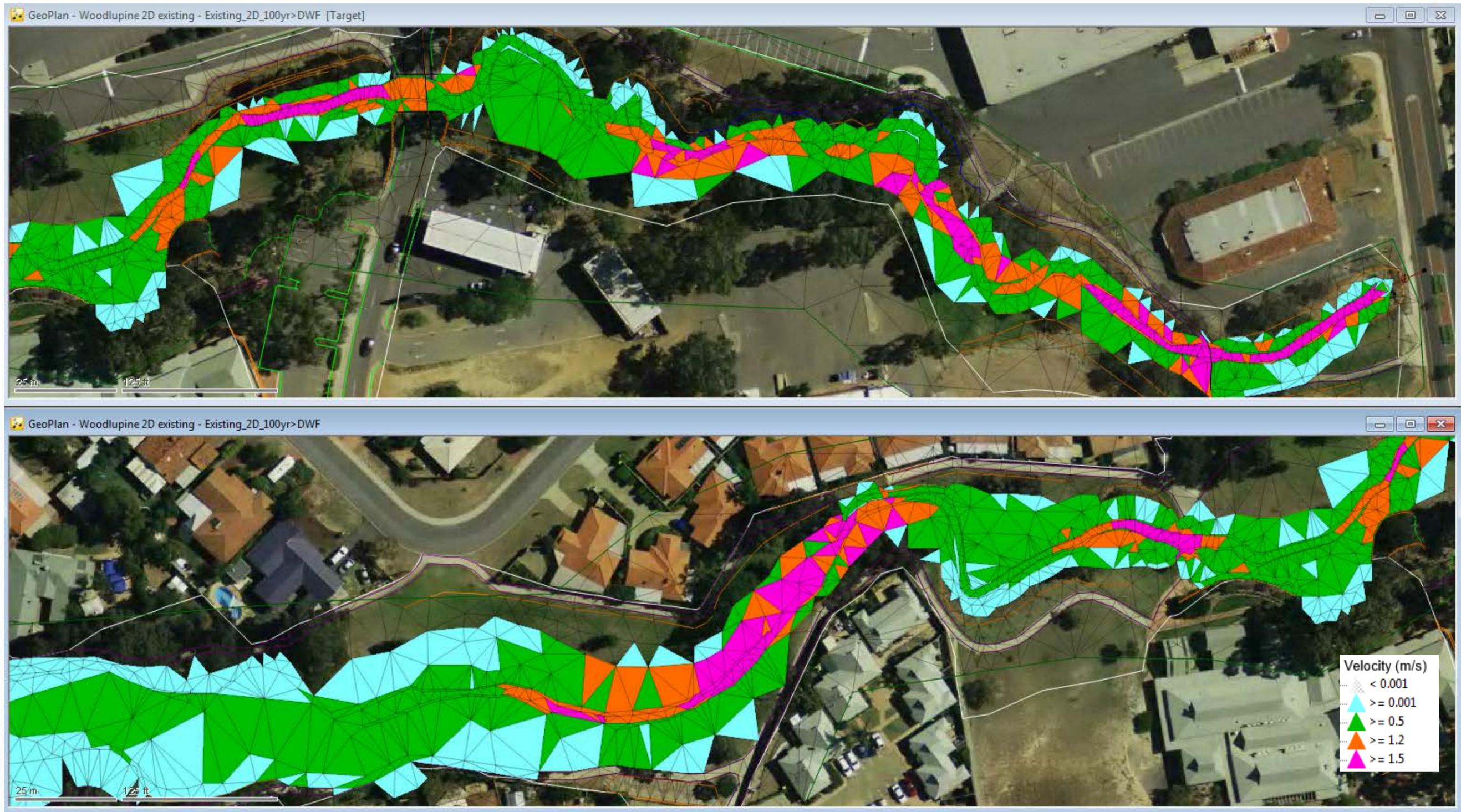


Figure 6: Existing extent of flooding and velocities expected for major flood (100yr ARI)

5 PROPOSED CONCEPTUAL DESIGN

5.1 Design approaches

5.1.1 Flow velocity

The most significant issue to be resolved along the Creek is bank erosion. As previously discussed, the Creek flows at high velocities through the area and this has resulted in extensive erosion of the outer banks of several meanders. To resolve this issue, it will be necessary to undertake works to stabilise the bed and banks of the Creek and reduce stream velocities.

The erosion of the Creek banks is largely caused by high velocity (>1.2 m/s) stream flow and is facilitated by a general lack of fringing understory vegetation. Where erosion has begun, it has subsequently become more severe through the gradual steepening of the banks and in some cases by undercutting action around existing structures and trees. Works to reduce bank slope and restore vegetation can substantially improve the Creek but in order to prevent reoccurrence it will also be necessary to reduce stream flow velocities.

Widening of the cross section will be required in order to reduce stream flow velocity in the Creek. A suitable design cross section would have an increased base width (to 2 m upstream and 3 m downstream of the shopping centre bridge) and vegetated banks at a slope of 1V:4H (0.63m over 2.5m).

In addition to widening of the cross section and revegetation of banks, a series of riffles are proposed to reduce the velocities in low flow conditions.

5.1.2 Creek restoration

A large proportion of the bed and banks of Woodlupine Creek within the Forrestfield District Shopping Centre are in relatively good condition and do not require substantial remedial works. In these sections significant expansion of the cross section may not be warranted and a lower cost treatment may be suitable. For those areas clearing of weeds and grass is recommended, to be replaced with selected locally endemic vegetation. Jute (or other natural fibre) matting may be used to provide temporary bank stabilisation during the planting and establishment period.

Limited earthworks should be undertaken in some stable sections where the lower banks have become steep and are beginning to undercut because of a lack of vegetation. In these sections it may be necessary to amend the bank slope prior to revegetation.

General guidance for revegetation of the Creek is provided in Appendix B.

Woodlupine Creek – Hydrology study



Plate 10: Stable section of the Creek requiring weed control and revegetation



Plate 11: Stable section of the Creek requiring limited bank slope reduction and revegetation

Woodlupine Creek – Hydrology study



Plate 12: Less stable section of the Creek requiring bank stabilisation and revegetation

Sections of the Creek where there are existing structures at risk from erosion, where structural control has been used in the past, or where significant erosion has occurred will require further remediation. Area of observed erosion are shown in Figure 7.

Where possible existing structures should be removed and the stream cross section should be modified to reflect the concept design, this will reduce velocities and provide a main channel bank slope of around 1:4. The resulting bank can then be successfully revegetated, using jute (or other natural fibre) matting to provide temporary bank stabilisation during the planting and establishment period.

In addition to cross section modification and bank stabilisation, riffles should be constructed along straight sections of the creek and at the inflection of meanders using locally available materials such as rocks and large woody debris. Riffles will assist in improving stability of the channel base, improving water quality and further reducing flow velocities by increasing the overall roughness of the creek bed and the creation of pools.

In the steepest and most severely eroded sections of the Creek, erosion has led to several trees being significantly undercut to the extent that they represent a significant danger to the public. A recent arborist assessment has identified that two trees should be removed (pers. comm. Nina Lytton, Shire of Kalamunda, 11th July 2014). These two trees requiring removal are additional to the dead trees and trees identified as being impacted as part of the concept design, shown in Appendix A,

Because of the height of the banks in the most severely affected sections as well as the proximity of developed lots and other infrastructure it will not be possible to reduce the slopes sufficiently to allow for revegetation to the extent that would be required for their stabilisation.

Woodlupine Creek – Hydrology study

The concept design identifies areas of the reserve where retaining structures would be appropriate. Specifically; where existing and/or modified banks or landform have a slope steeper than 1V:2H, or where local treatments can assist in protecting existing structures or trees. In these locations, permeable, flexible treatments such as log walls or loose rock, or gabions are preferred. Flexible, permeable treatments are more effective in dissipating stream flow energy and are able to adapt to acute erosion events.

Detailed design of works will be required to further develop the design. Costs could be reduced and outcomes improved by considering the following modifications to the concept on a case by case basis:

Diversion of the Creek to allow for a vegetated bank at a shallower grade – typically a bank slope of less than 1:4 is required for vegetation to be successful. The ability to undertake diversion works is constrained by the presence of existing mature trees close to the inner bank and extensive diversion could result in loss of some trees on both sides of the Creek. Small modifications to the alignment or invert levels may produce savings in earthworks.

Terracing retaining walls from the surrounding lots and/or infrastructure to improve community or environmental outcomes – typically terracing would need to incorporate individual drops of no more than 1.2 m to avoid the need for fencing or safety rails. The use of gabions within the stream channel could provide benefits in regards to extent of work and protect embankments from higher velocities which are likely to occur with more constrained cross section. Gabions also provide an opportunity for revegetation as plants may be positioned to grow through spaces within or behind gabion walls, as shown in Plate 19.

Modifying the design cross section to reduce the footprint and subsequent earthworks requirements.



Plate 13: Existing structural stabilisation to be removed, bank behind requires bank slope reduction and revegetation or use of permeable stabilisation techniques.

Woodlupine Creek – Hydrology study



Plate 14: Existing structure requires protection from permeable stabilisation techniques



Plate 15: Severely eroded outer bank with undermined trees and car park beyond which limits potential for bank slope reduction as well as trees on inner bank restricting creek diversion

Woodlupine Creek – Hydrology study



Plate 16: Erosion of outer bank at risk of undermining existing retaining wall, revegetation and bank stabilisation will be necessary to prevent further erosion



Plate 17: Erosion of bank at risk of undermining trees, retaining wall and car park beyond

Woodlupine Creek – Hydrology study



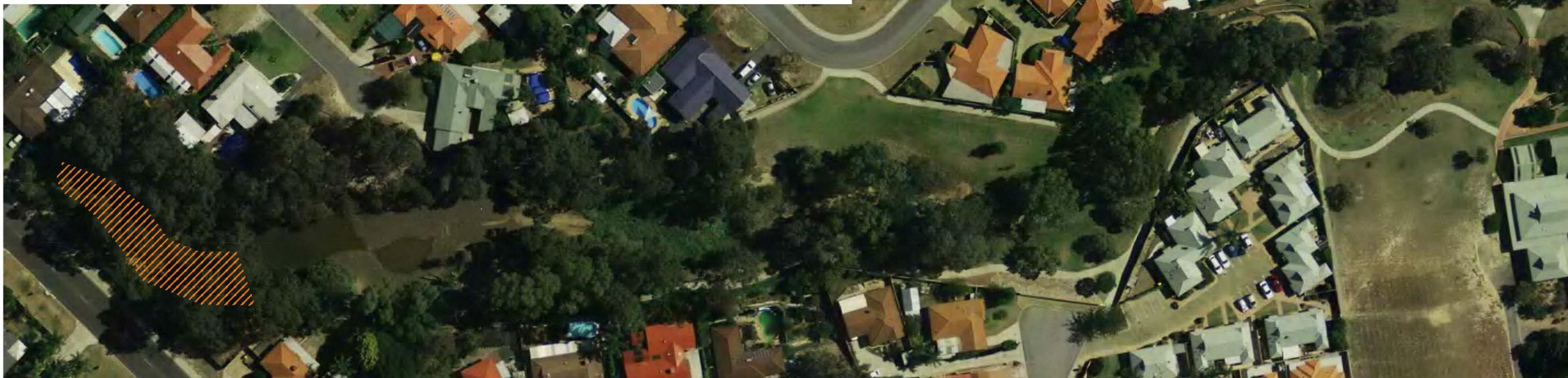
Plate 18: Severe erosion of bank undermining trees and threatening car park beyond



Plate 19: Example of vegetation growing within gabion walling

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Figure 7 - Areas of observed erosion



Level of erosion

-  High
-  Medium
-  Low

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5.1.3 Lower detention area / wetland

The weir immediately upstream of Dawson Avenue creates a large pond upstream during winter. This pond assists in improving water quality by reducing flow velocity. The change to low velocities results in settlement of suspended solids and allows biological processes to take place which can result in uptake of nutrients and other pollutants.

There is an opportunity to enhance amenity and water quality by constructing a settlement pond at the upstream end of the flooded area. The settlement pond should be designed to provide easy access for maintenance vehicles so that sediment and gross pollutants can be cleared on a regular basis. By removing a large portion of the sediment load in a dedicated pond, the downstream flooded area can be maintained in a more stable condition.

The concept design illustrates use of a large riffle / weir structure to create the settlement pond and regrading of the downstream area to provide a uniform sloping invert. Regrading of the downstream pool will improve safety and access for maintenance and reduce the formation of small ponds in spring and early summer after stream flow subsides.

5.1.4 Drainage management

There are a number of local drainage discharges into the Creek that contribute to bed and bank instability as well as being potential contaminant sources. Whilst water quality has not been identified as a major issue in this part of the catchment, it is clear that improvements could be made through the implementation of water sensitive urban design principles through development and redevelopment as it occurs within the catchment.

Developments and re-developments within the Woodlupine Creek catchment should generally be designed to achieve the following objectives:

- Maximise opportunities for use and reuse of stormwater
- Mimic the natural hydrology of the site
- Minimise the use of fertilisers and irrigation
- Manage stormwater runoff to provide amenity, safety and prevent damage to infrastructure

In addition, commercial and light industrial developments and redevelopments in the catchment should be designed to prevent pollutants from leaving the site and entering the downstream environment through the use of:

- On-site infiltration measures (soakwells)
- Bioretention swales and buffer strips
- Gross pollutant traps
- Bunded storage areas, washdown bays and internal areas
- Wastewater treatment systems

As well as improved water management through development and redevelopment of the surrounding catchment there are opportunities to improve water quality within the Creek through disconnection of direct drainage discharges and creation of riffles and pools to allow for the establishment of aquatic and riparian habitats where biological uptake of nutrients can occur.

Minor local drainage discharges should generally be removed from directly entering the Creek and allowed to discharge via overland flow through fringing vegetation. Some localised erosion control may be required and as a general guide; outlets of the type shown in Plate 19 should be relocated at least 10 m from the Creek bed.

Woodlupine Creek – Hydrology study



Plate 20: Minor local drainage discharges should discharge via vegetated overland flow

It is unlikely to be feasible to relocate several of the more significant local drainage discharges because there is insufficient space to create an appropriately sized overland flowpath. These discharges are in some cases also significantly contributing to erosion within the Creek bed as a result of their own rate and direction of discharge or through disturbance of flow within the Creek caused by headwall placement and design. It is recommended that riffles are located downstream of significant local discharges and that outlets are upgraded to improve management of discharge velocities. In addition to assisting with erosion control, riffles will provide for detention of minor outflows and allow nutrient uptake to occur through biological processes.



Plate 21: Local drainage discharge outlets requiring modification to limit erosion effects

5.2 Conceptual design

A concept has been developed which illustrates the extent of works required to reconstruct the bed and banks of the stream and provide a cross section that will limit velocities and associated potential for erosion. The general cross section described in Section 5.1.1 was applied through the study area and modified locally to allow retention of some trees and to respond to local ground conditions.

It is acknowledged that implementation of this cross section throughout the study area may not be practical due to resource constraints. Therefore, the design presented in Section 5.2 presents an “ultimate” scenario which can be progressively implemented and/or modified locally. The priority for reconstruction illustrated in the concept design follows the severity of existing erosion, shown in Figure 7.

The ultimate concept for rehabilitation and restoration of the Woodlupine Creek is presented in Appendix A. The concept incorporates a combination of the approaches outlined previously, with some diversions of the stream channel undertaken to provide sufficient space to manage and control the most severe erosion effects and provide a practical interface with existing embankments. The alignment and interface treatments have been selected to limit the impacts on existing healthy trees where possible.

The hydraulic capacity of the concept design was assessed by modifying the model described in Section 4 to represent proposed ground modifications, riffles and revegetated areas. Outcomes of the modelling illustrated in Figure 8 through Figure 10 illustrate the expected extent of flooding and velocities throughout the study area. The majority of velocities expected within the channel are now less than 0.5 m/s for the minor event (10 year ARI), as shown in Figure 9.

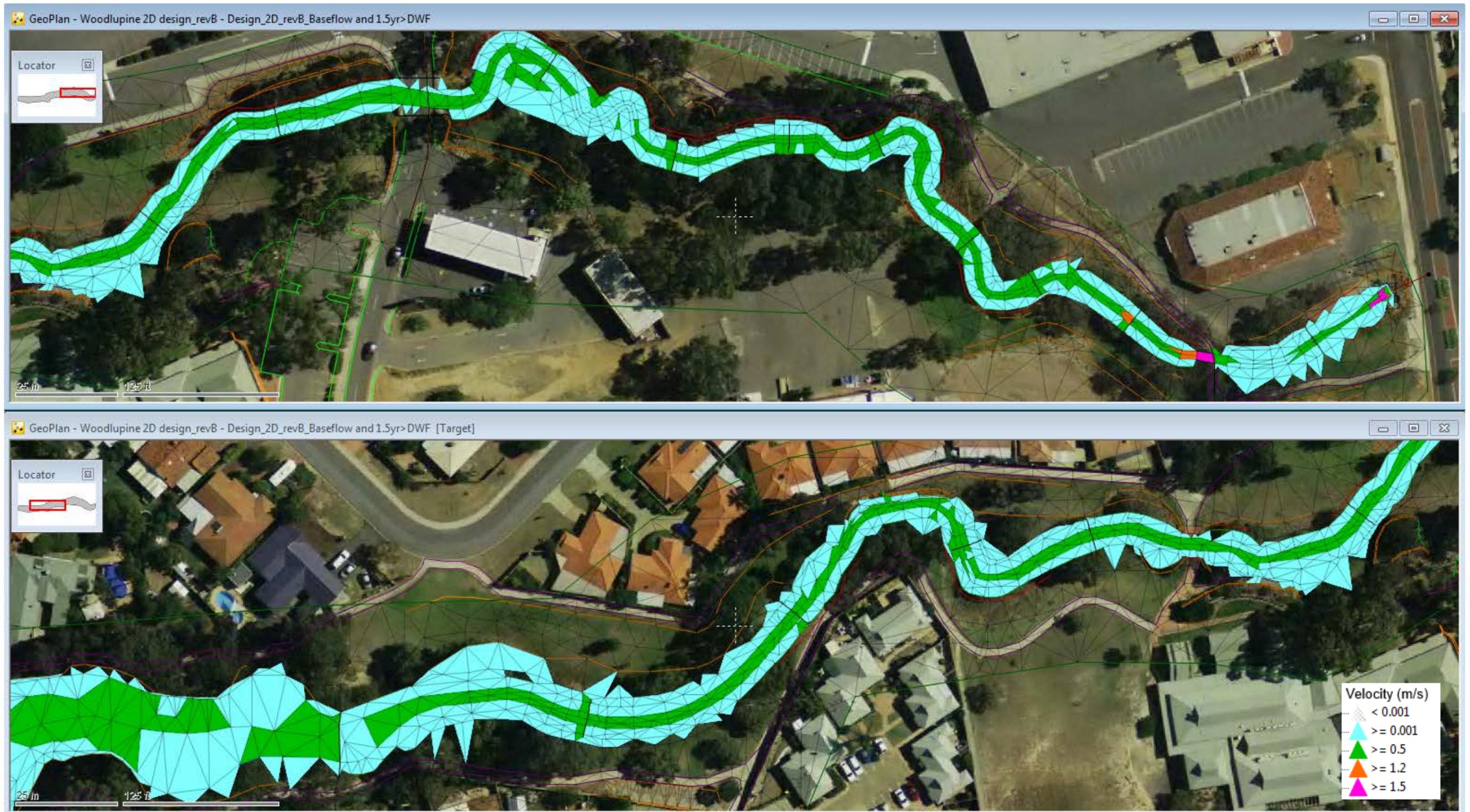


Figure 8: Concept design extent of flooding and velocities expected for frequent event (2 m³/s)

Woodlupine Creek - Hydrology study

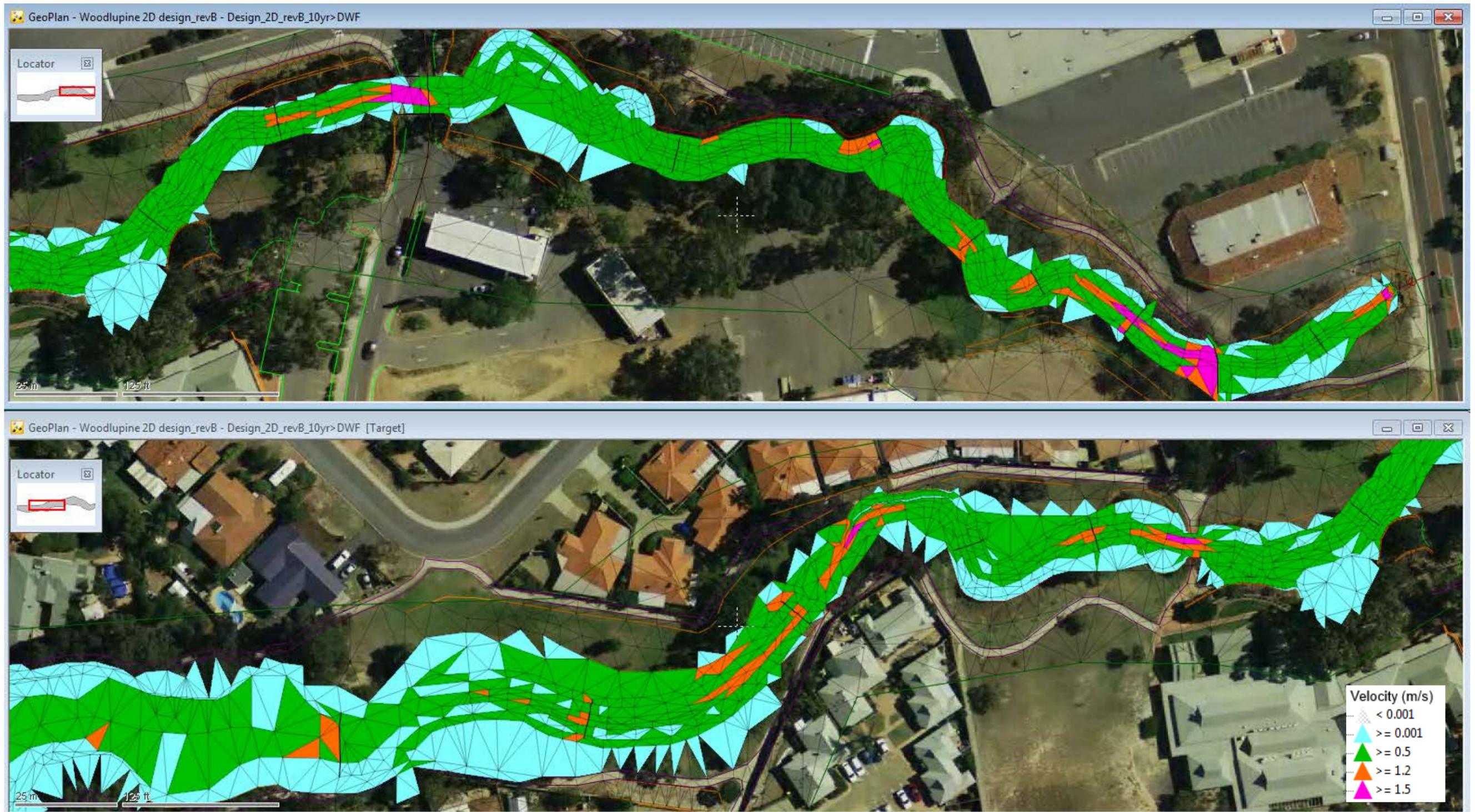


Figure 9: Concept design extent of flooding and velocities expected for minor flood (10yr ARI)

Woodlupine Creek - Hydrology study



Figure 10: Concept design extent of flooding and velocities expected for major flood (100yr ARI)

6 IMPLEMENTATION PLAN

It is recommended that sections of Woodlupine Creek requiring more urgent attention are prioritised and funding for capital works is distributed across three separate projects. This will allow implementation of urgent works in a timely manner and distribution of costs for lower priority works over a longer timeframe.

The works illustrated in the concept plan have been divided into three priority areas, divided as follows:

Priority 1 areas

- **Section C;** construction of the sediment pond at the upstream end of the detention area. This improvement will facilitate an improved maintenance regime and a significant improvement to water quality and amenity in the downstream system..
- **Section F;** upstream of the Shopping Centre access bridge, where significant erosion has occurred creating steep banks. This area presents the greatest risk of environmental impact, to safety and to damage of property and infrastructure.

Priority 2 areas

- **Section A:** bank reconstruction immediately upstream of Dawson Avenue, where significant structural damage has occurred to existing reinforcements. The damage in this area represents a risk to future performance and potential for significant erosion during major storm events.
- **Section E:** works to improve bank and stream bed stability in the area immediately downstream of the Shopping Centre access bridge. This area is subject to high flow velocities as a result of the bridge, has moderately steep banks which are at risk of erosion, and presents an opportunity for improved amenity.

Priority 3 areas

- **Section B:** regrading and planting of the flood detention pond. Improvements will improve amenity and safety during dry conditions and facilitate improved water quality and environmental outcomes.
- **Section D:** bank reconstruction and planting in through the central part of the study area. Improvements in this relatively stable section of the site will facilitate improved water quality.
- **Section G:** bank reconstruction and planting downstream from Strelitzia Avenue. Improvements in this relatively stable section of the site will result in improved amenity and facilitate improved water quality.

6.1 Schedule and costs

An indicative schedule presented in Table 5 reflecting this proposed prioritisation into three separate areas of rehabilitation and restoration works.

An estimate of the works and materials required to implement the conceptual Woodlupine Creek rehabilitation and restoration works has been prepared and is presented in Table 4. The indicative total project cost is \$1,479,854 excluding GST. These costs reflect the estimated scope of rehabilitation and restoration works for the whole project area, including a five year revegetation, weeding and monitoring program.

Woodlupine Creek – Hydrology study

Please note that the costs are indicative only and should be used as a guide for more detailed planning and design. Costs should be reviewed over time and updated to reflect local supply and installation costs any changes in rehabilitation and restoration requirements. All works will need to be costed prior to implementation.

Notes on cost estimate

The cost estimate below has been prepared using the best information available at the time, based on the areas and dimensions illustrated in the concept design and making various assumptions necessary in order to derive an estimate of works. The intended purpose of the cost estimate is to provide a magnitude of order cost to inform planning and scoping processes. Unit rates have been sourced from Rawlinsons Construction Manual and local industry rates. Cost estimates should be reviewed throughout further development of project scope and preparation of detailed designs.

A detailed breakdown of cost estimates and quantities of items of work are presented in Appendix C. The detailed breakdown indicates a possible distribution of costs between the Shire of Kalamunda and the Water Corporation, based on the relevant responsibilities of the respective organisations.

A number of key assumptions have been made to develop the preliminary cost estimate for the Woodlupine Creek rehabilitation and restoration works, including:

- The central stream channel will be revegetated at a low density (approx. 30% of normal rates).
- Costs reflect a five year revegetation, weed control and vegetation monitoring program. Planting density is expected to decrease over time; 20%, 10%, 5% and 2% in subsequent years, following the initial planting.
- Erosion control matting includes use of Jute mesh on banks and jute mat in the central stream channel.
- Riffles will be constructed of locally sourced rock, with an average rock size of 0.5 m and will be underlined with geotextile fabric mesh.
- Costs have allowed for excess excavated material for channel realignments to be disposed of at Red Hill Waste Management Facility. There may be an opportunity to reduce costs by reuse offsite, subject to testing of soil.
- The rates used for retaining walls assume construction using split face concrete masonry blocks. It is assumed that retaining walls will be cantilever with depth approximately equal to wall height. Backfill to will be sourced from excavated material, but some allowance has been made for importing of fill.
- It is assumed that gabions will be used for bank stabilisation in Section A. In other areas it is assumed that gabions will be used for half of all walls less than 1 m in height.
- Gabions will be constructed using PVC coated steel wire mesh underlain with geotextile fabric, assuming level backfill.
- A nominal fee of \$100,000 has been included for detailed design.

Woodlupine Creek – Hydrology study

Table 4: Work and material requirements

Management item	Description	Priority 1 Cost estimate (\$ exc. GST)	Priority 2 Cost estimate (\$ exc. GST)	Priority 3 Cost estimate (\$ exc. GST)	Total cost estimate (exc. GST)
Civil Works					
Earthworks	Cut and fill associated with channel widening and bank stabilisation; including site establishment, survey, cut and fill and disposal of excavated material.	\$ 22,500	\$ 14,300	\$ 33,900	\$ 70,700
Retaining walls	Excavation and construction of concrete retaining wall between 0.5 – 4 m varying in height. Includes backfill and disposal.	\$ 329,300	\$ 73,200	\$ 58,600	\$ 461,100
Gabions	Construction of gabion wall varying between 0.5-2 m in height and filled with 150-300 mm rock.	\$ 1,000	\$ 101,200	\$ 41,600	\$ 143,800
Riffles	Construction of 16 x ~20 m ² riffles and one ~75 m ² riffle using ~0.5 m rock and underlined with geotextile fabric.	\$ 8,900	\$ 4,600	\$ 9,200	\$ 22,700
Fencing	Post and rail fencing constructed along retaining walls greater than 1.5 m in height.	\$ 2,100	\$ 3,700	-	\$ 5,800
Revegetation Works					
Matting	Jute matting for erosion control over revegetated areas (banks and 20% of central channel).	\$ 800	\$ 300	\$ 9,900	\$ 11,000
Revegetation	Five year planting program over banks, central channel and wetland.	\$ 17,300	\$ 6,300	\$ 38,500	\$ 62,100
Weed control	Five year weed control program over revegetated banks and central channel.	\$ 21,400	\$ 7,800	\$ 47,700	\$ 76,900
Signage	Ten aluminium signs installed describing the rehabilitation program.	\$ 800	\$ 500	\$ 1,300	\$ 2,600
Professional fees					
Detailed design		-	-	-	\$ 100,000
Vegetation monitoring and creek inspection	Five year monitoring program of revegetation works.	-	-	-	\$ 34,000
Total projected programme cost		\$ 404,100	\$ 211,900	\$ 240,700	\$ 990,700

Table 5: Recommended schedule for implementation

Management Task	Year Season	1			2				3				4				5				6				7				8																
		Wi	Sp	Su	Au	Wi	Sp	Su																																					
Priority 1 Area																																													
Design		X																																											
Civil Works				X																																									
Planting					X																																								
Main' / Weed Control						X	X		X	X	X		X	X	X		X	X	X		X	X	X		X	X	X																		
Priority 2 Area																																													
Design		X																																											
Civil Works								X																																					
Planting									X																																				
Main' / Weed Control										X	X		X	X	X		X	X	X		X	X	X		X	X	X		X	X	X														
Priority 3 Area																																													
Design		X																																											
Civil Works												X																																	
Planting													X																																
Main' / Weed Control														X	X		X	X	X		X	X	X		X	X	X		X	X	X														

6.2 Monitoring and maintenance

Monitoring will be necessary to measure the progress and success of the bank stabilisation, revegetation and weed control operations. Monitoring of the site will aid in undertaking additional activities and adaptive management each year ensuring the final result is of a high standard.

6.2.1 Vegetation monitoring

Vegetation monitoring should be undertaken twice a year, in spring and summer to provide a comparison between the two extremes of weather condition.

Spring monitoring allows the assessment of weed species during their most prolific growth phase, and further weed control can be provided if it is needed. It also provides information on the health and progress of tubestock plantings.

Summer monitoring allows the assessment of plants at the harshest time of the year, when soil moisture levels are at their lowest to provide an assessment of the health of tubestock and any losses caused by the summer conditions. This will determine the extent of infill planting that may be required in the following winter. The extent of weeds can also be assessed and further weed control undertaken as required.

6.2.2 Creek inspection

The Creek should be inspected twice a year at the end of summer and end of winter to provide an understanding of remediation works required and make preparations for seasonal effects.

Towards the end of winter the creek should be inspected for any acute damage caused during winter storms as well as any signs of chronic erosion damage. Remedial works may be required and should be scheduled to occur prior to the following winter season. Works that may be required include:

- Bank slope adjustment and revegetation
- Replacement of riffle materials
- Realignment of riffle materials to modify flow direction away from an eroding section
- Clearing of culvert structures
- Tree or vegetation pruning, removal of excessive/large debris

Prior to the commencement of winter storms the creek should be inspected to ensure that scheduled remedial works have been undertaken satisfactorily and to check culverts and other structures for any blockages or recent damage.

7 REFERENCES AND RESOURCES

ARMCANZ & ANZECC 2000, *Australian and New Zealand guidelines for fresh and marine water quality*, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, Canberra.

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Swan River Trust 2010, *Yule Brook Catchment Nutrient Report Card*.

Water Corporation, 2008, *Yule Brook Main Drain, scheme Review*.

Water and Rivers Commission 1999-2003, *River Restoration; a Guide to the Nature Protection, Rehabilitation and Long-Term Management of Waterways in Western Australia*

APPENDIX A: CONCEPT DESIGN

Concept Design – Plan Index

Concept Design – Plan 1

Concept Design – Plan 2

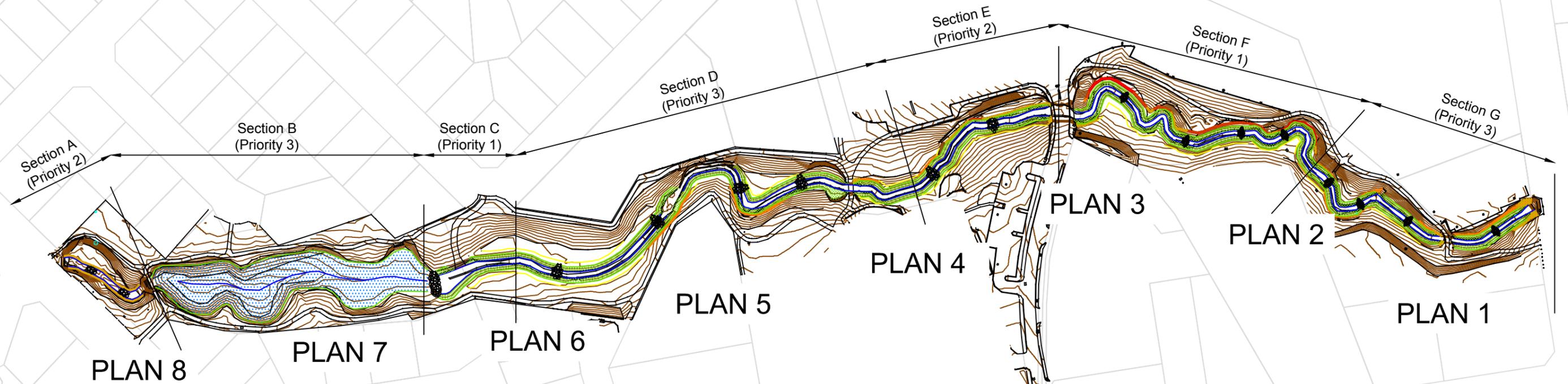
Concept Design – Plan 4

Concept Design – Plan 5

Concept Design – Plan 6

Concept Design – Plan 7

Concept Design – Plan 8



LEGEND

- Existing features
- Design contours (0.25m)
- Cut interface
- Top of Channel
- Base of Channel
- Bank stabilisation / reveg
- Seasonal inundation / pond
- ⊗ Riffle
- Retaining, Terracing or Gabion Walls
- 0 m to 1 m
- 1 m to 2 m
- 2 m to 3 m
- 3 m to 4 m

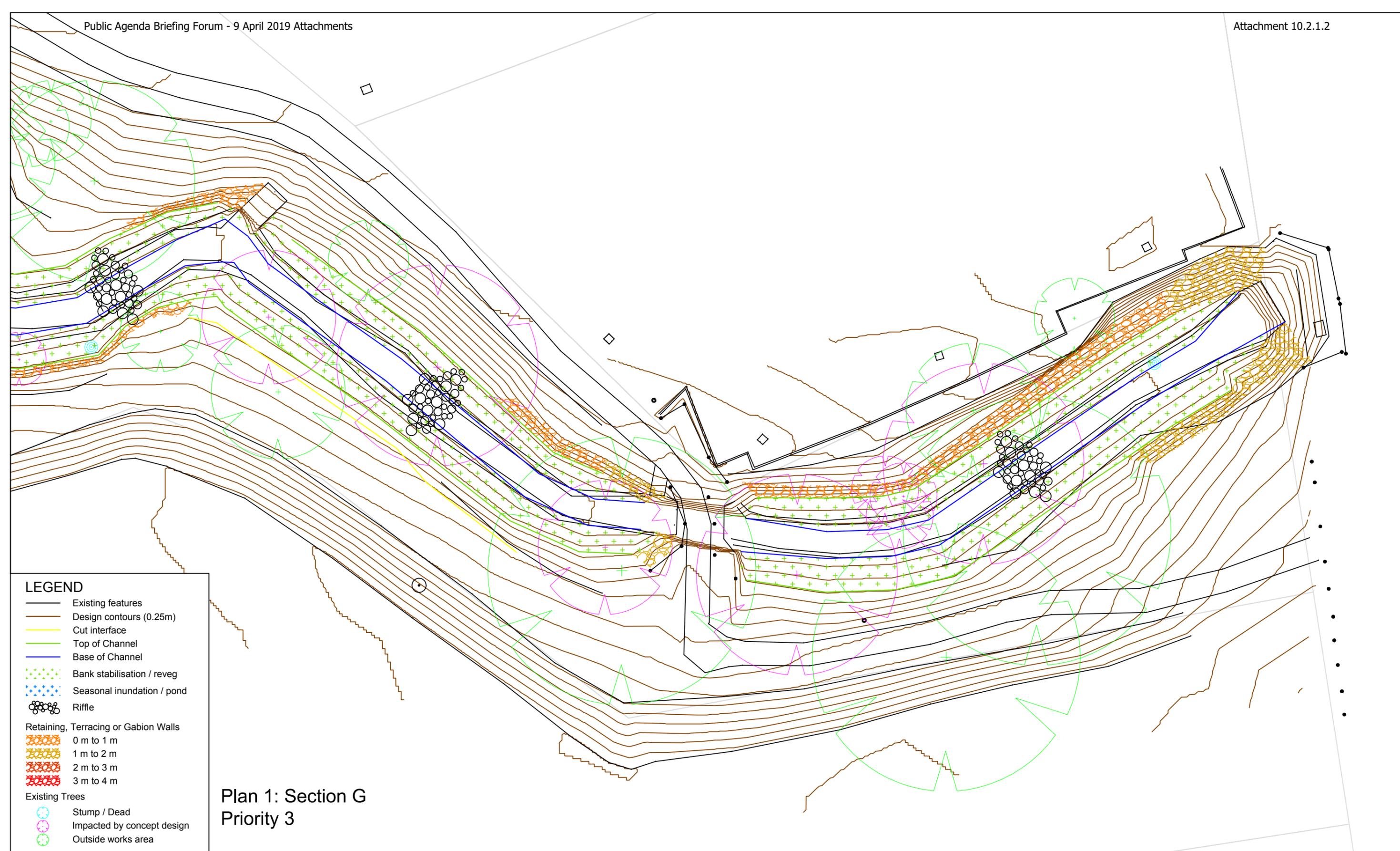
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B	01 Aug 2014	KN	HB

DATA SOURCES Landgate Dept of Planning	A3 SCALE 1:2000 0 20 40m Projection: MGA50 Datum: AHD
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 - 2 m to 3 m
 - 3 m to 4 m
 - Existing Trees
 - ⊗ Stump / Dead
 - ⊗ Impacted by concept design
 - ⊗ Outside works area

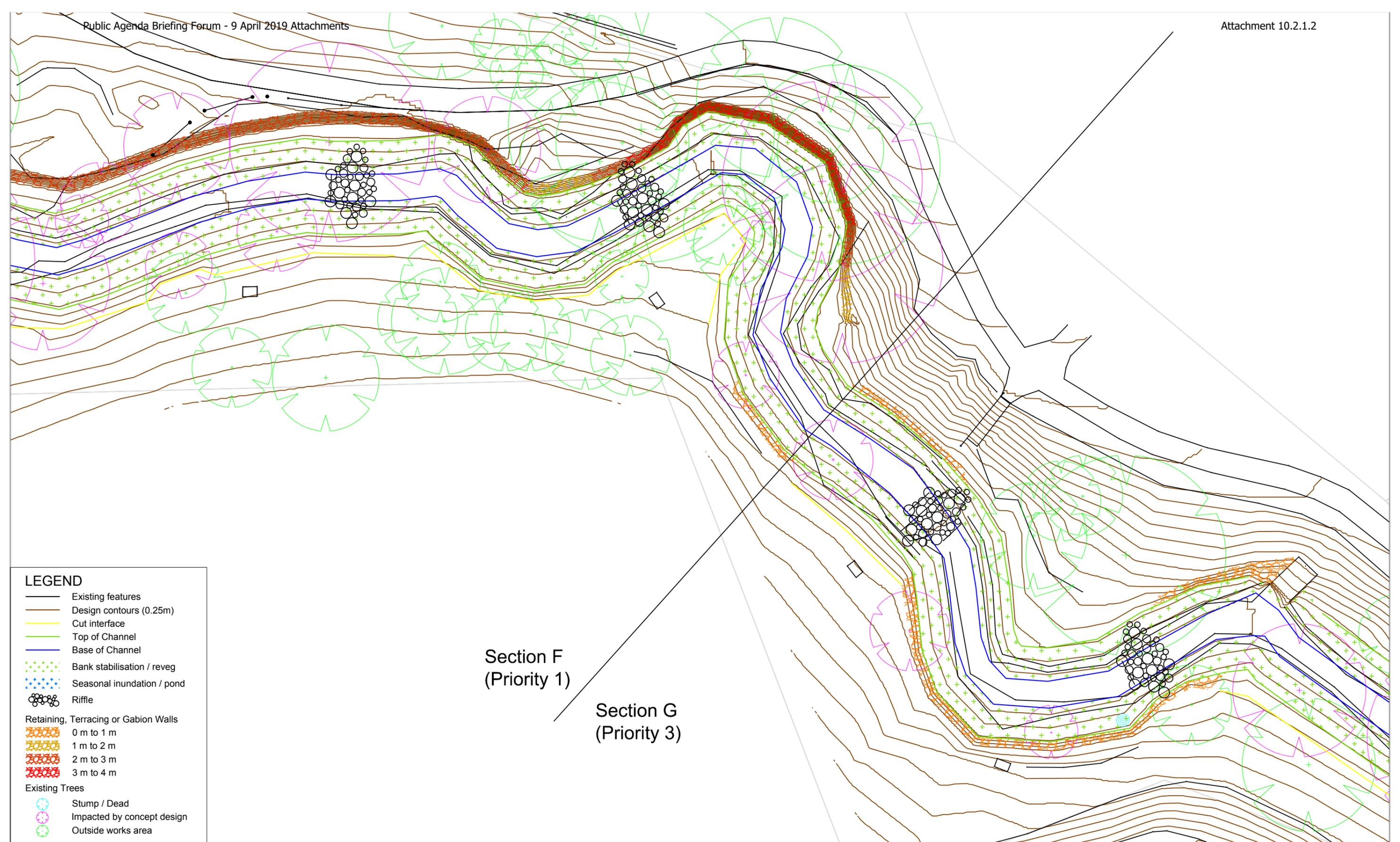
Plan 1: Section G
Priority 3

Shire of Kalamunda - Woodlupine Brook Preliminary Design - Plan 1

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 - ⊗ Outside works area

Section F
(Priority 1)

Section G
(Priority 3)

Shire of Kalamunda - Woodlupine Brook Preliminary Design - Plan 2

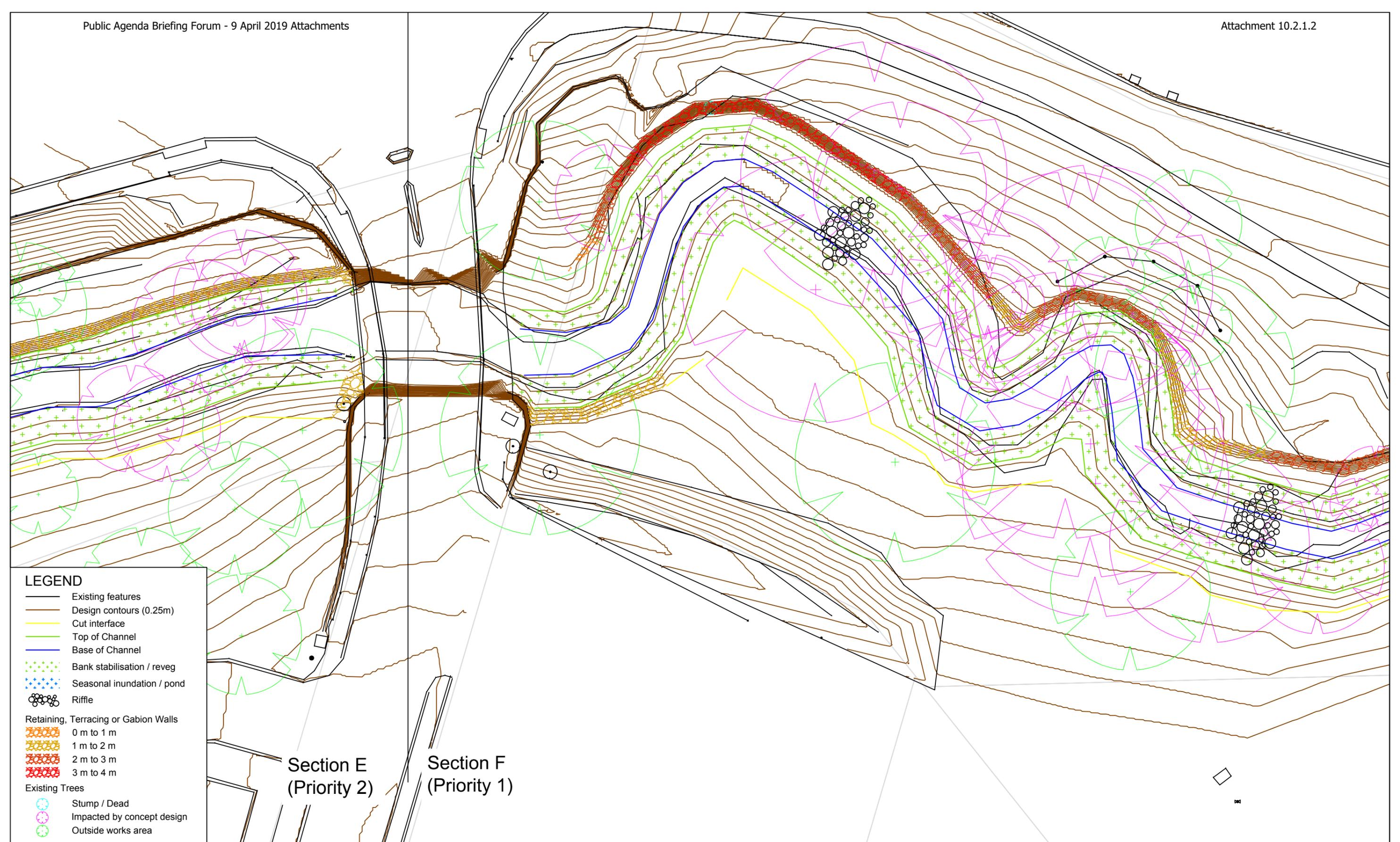
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 - ⊗ Impacted by concept design
 - ⊗ Outside works area

Section E (Priority 2) Section F (Priority 1)

Shire of Kalamunda - Woodlupine Brook Preliminary Design - Plan 3

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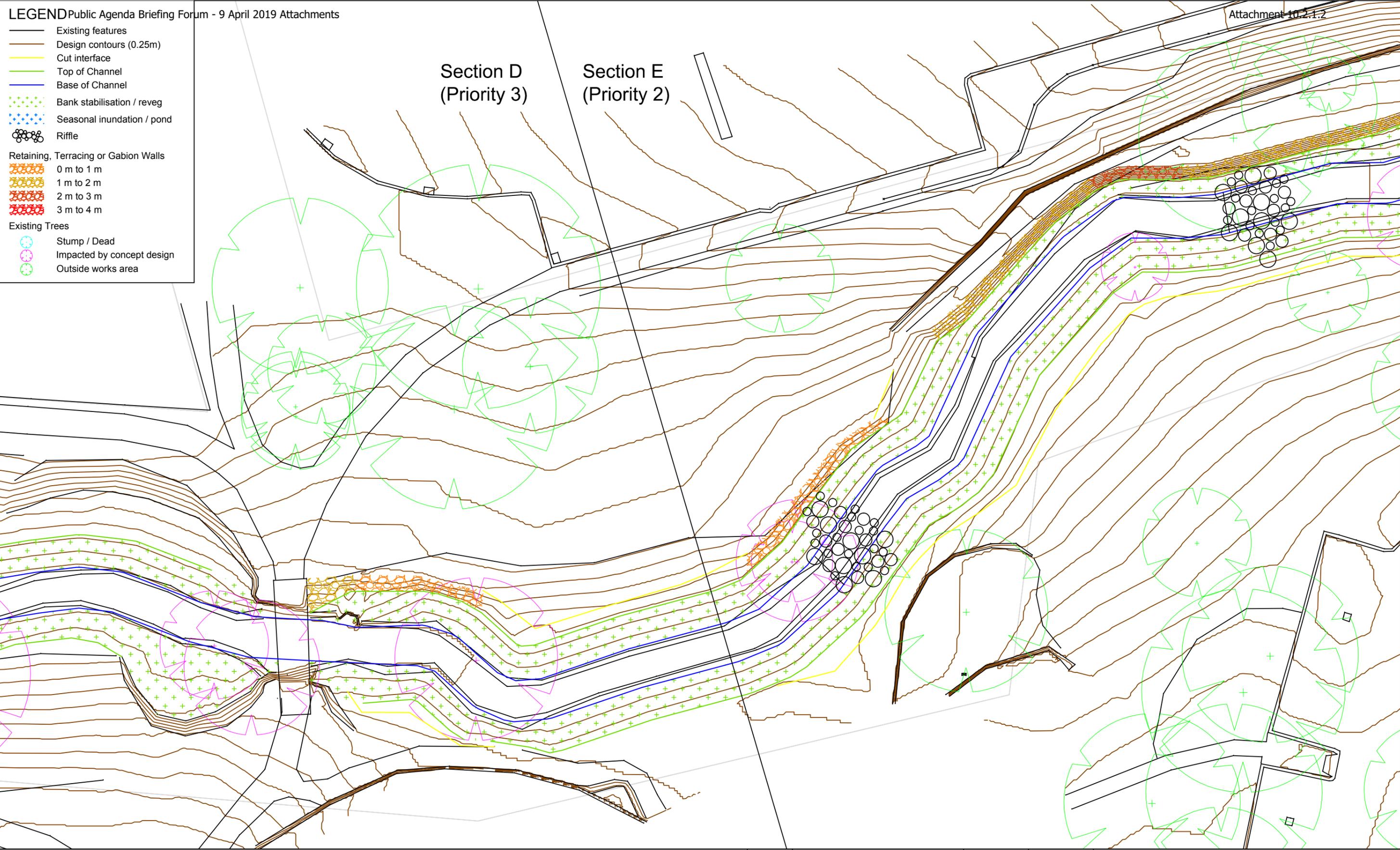
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 - 3 m to 4 m
- Existing Trees
 - ⊕ Stump / Dead
 - ⊕ Impacted by concept design
 - ⊕ Outside works area

Section D
(Priority 3)

Section E
(Priority 2)

Attachment 10.2.1.2



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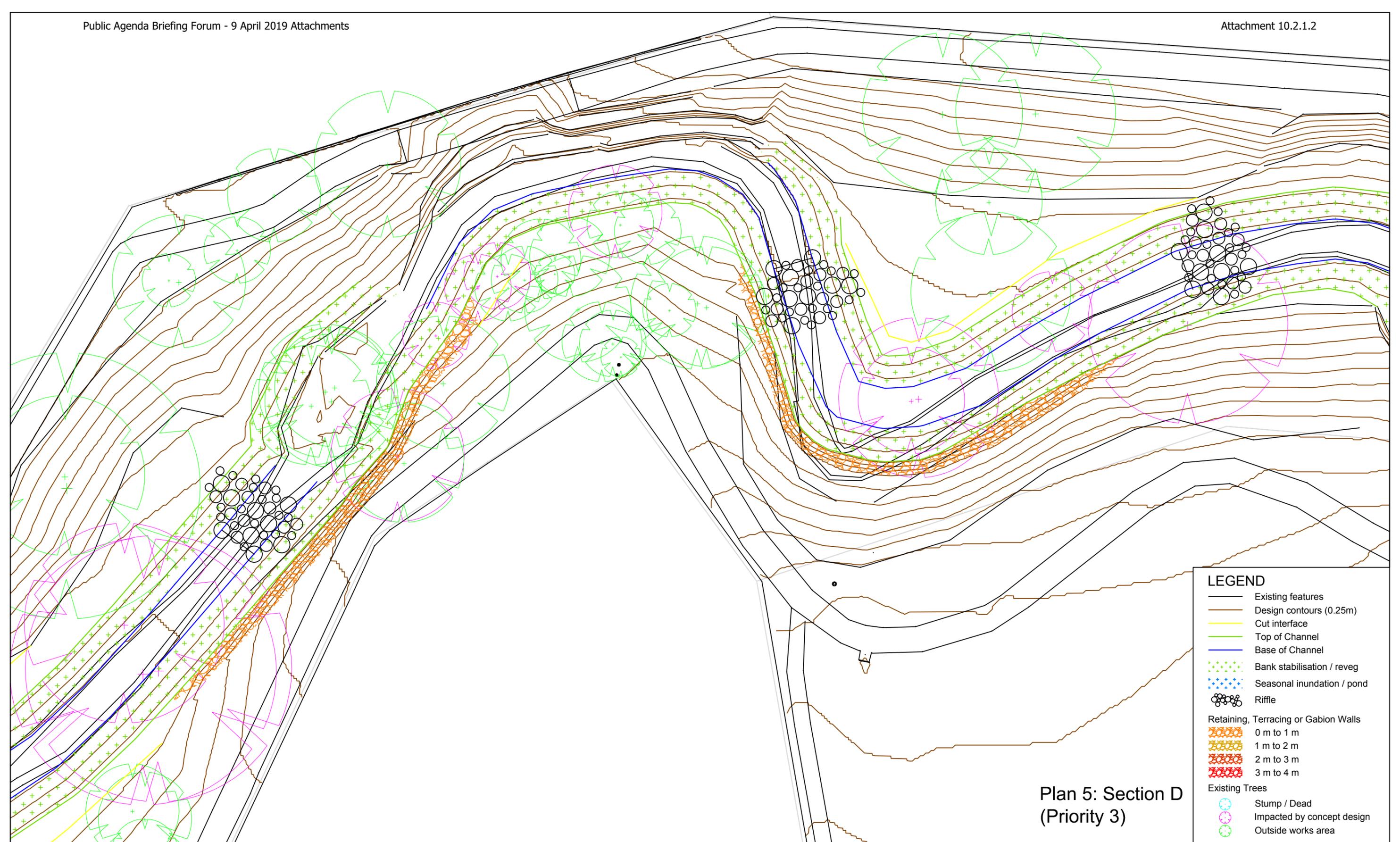


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Datum: AHD



essential
environmental



Plan 5: Section D
(Priority 3)

LEGEND	
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	Design contours (0.25m)
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	Top of Channel
	Base of Channel
	Bank stabilisation / reveg
	Seasonal inundation / pond
	Riffle
Retaining, Terracing or Gabion Walls	
	0 m to 1 m
	1 m to 2 m
	2 m to 3 m
	3 m to 4 m
Existing Trees	
	Stump / Dead
	Impacted by concept design
	Outside works area

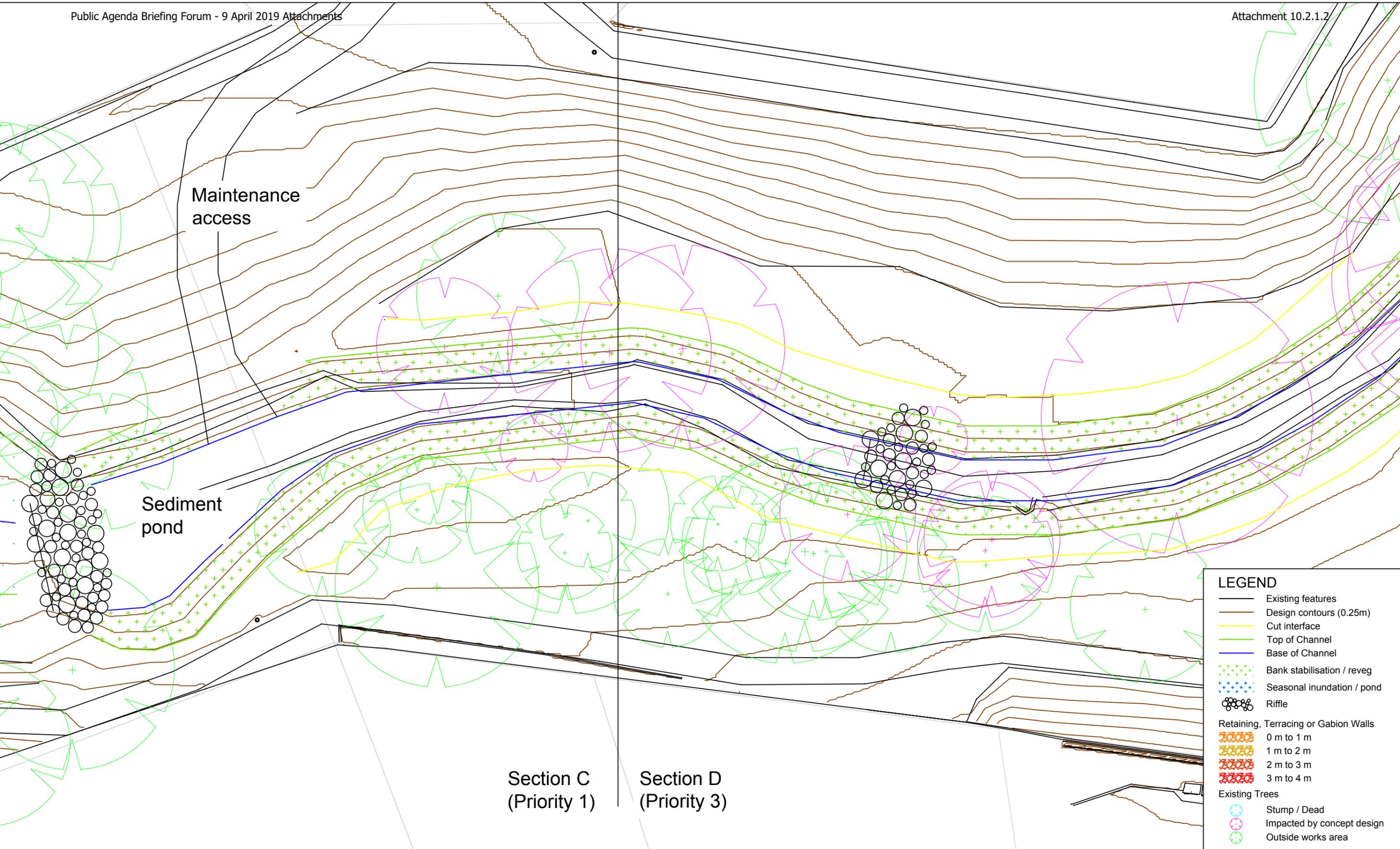
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LEGEND

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 - ⊗ Outside works area

Shire of Kalamunda - Woodlupine Brook Preliminary Design - Plan 6

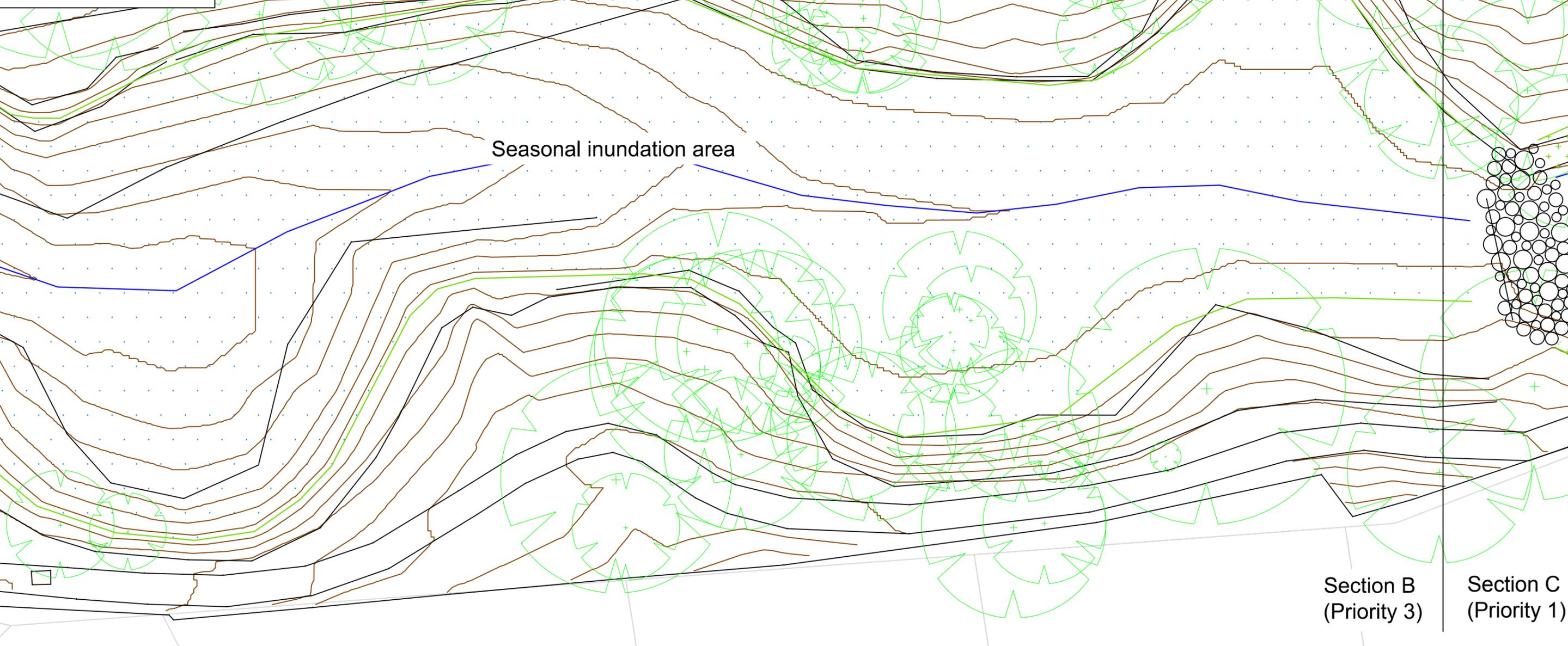
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- Existing features
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- ⊕ Outside works area



Seasonal inundation area

Section B (Priority 3) | Section C (Priority 1)

Shire of Kalamunda - Woodlupine Brook Preliminary Design - Plan 7

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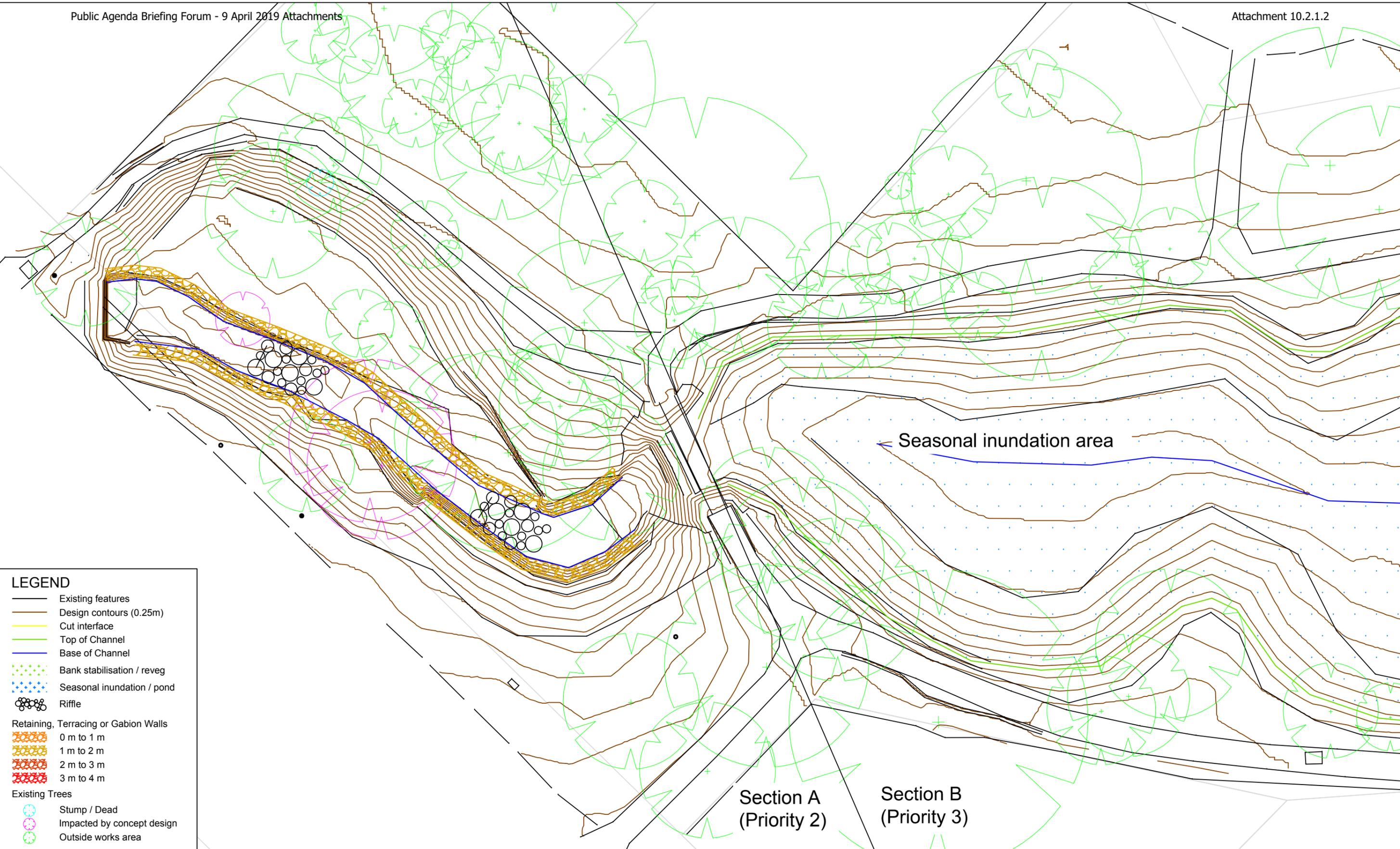
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A3 SCALE 1:250

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 - 3 m to 4 m
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 - Stump / Dead
 - Impacted by concept design
 - Outside works area

Section A
(Priority 2)

Section B
(Priority 3)

Seasonal inundation area

Shire of Kalamunda - Woodlupine Brook Preliminary Design - Plan 8

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APPENDIX B: REVEGETATION RECOMMENDATIONS

Site preparation

To prepare a waterway for a revegetation program the first consideration recommended for the program is the stabilisation of the embankment. This requires identifying where erosion and/or steepening of natural gradients has occurred to determine where plantings are likely to be washed away.

Bank stabilisation is achieved through re-grading using machinery to batter slopes. Where this is not possible it is recommended that steep banks are terraced and secured using fibre matting, such as jute mat, which also allows seedlings to be planted into. Jute matting will also suppress germination of weed seeds.

To ensure roots of planted seedlings have properly taken, temporary deflection of flows within the riparian zone may be required until plants are properly rooted. Rocks, fibremulch rolls or deflectors/dissipators can be used upstream of a planted area to disperse and slow the flow of water.

Before any revegetation works are undertaken, it is recommended that clear site mark-out for each riparian and dryland zone to be stabilised, weeded, mulched, and planted/seeded be undertaken using stakes or flagging. Engineering works may also require a proper survey to achieve the correct grade.

Weed control

Before revegetation with native plants is undertaken, weeds must first be removed and activities to prevent the germination of future weeds be carried out. Areas of high disturbance or bare soils are very conducive to weed germination and should be targeted. Appropriate weed control methods depend on the extent and types of weeds present. Several basic principles of weed control are recommended to achieve successful revegetation of a waterway:

- Start at the upstream end of weed infestation, possibly extending weed control beyond the area demarked for revegetation;
- Minimise disturbance of substrate and any existing native vegetation;
- Rate of native plant regeneration should determine the rate of weed removal; and
- Undertake weed control one season before planting is undertaken to allow at least one follow-up treatment.

A combination of the following weed control methods are recommended for weed removal and to prevent weed germination, where appropriate:

- **Hand removal** – suitable for annual weeds, where a large labour supply is available, or a small amount of weed infestation occurs;
- **Drowning** – suitable in wetlands, to drown introduced species such as Bulrush and Kikuyu, by cutting weeds beneath the water level and covering with weighted black plastic as water levels rise at the start of winter;
- **Seedhead removal** – suitable where group resources are insufficient to eradicate a weed species and will help new seedlings from appearing;

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- **Stem injection, cut & paint** – suitable where large woody weeds occur (e.g. Castor Oil Bush). Can be injected with herbicide or plant cut down and the stump painted with herbicide. In wet conditions stem injection is preferred due to weeping of stumps.
- **Scalping** - suitable where sites are very degraded with no native vegetation and a high weed seedbank in surface soils occurs. Top soil material removed for later treatment, but not suitable for areas affected by flowing water or high groundwater. Also important to ensure original landform is not altered.
- **Smothering** – suitable for bare soils, which are conducive to weed germination. Weed-free mulch or jute matting should be used to suppress seedling germination and prevent seeds from reaching soil.
- **Herbicide** – should be used only where large infestations of weeds and rhizomatous species occur. Only low toxicity approved herbicides should be used and extreme care should be taken to avoid direct spraying into water. Use of surfactants should be avoided due to toxic effects on aquatic fauna and herbicides should not be applied during frog breeding seasons.

Ongoing and correctly timed weed control is essential to successful revegetation and ensures native seedling survival. Revegetation areas should be monitored at least twice yearly, particularly in winter due to proliferation after rain events. However, as weed species germinate at different times of the year, weed monitoring and control activity is also recommended in summer and spring for at least five years following initial revegetation.

Further information on how to remove specific weed species is available in *River Restoration Report no. RR4 (1999)*, from *River Restoration; a Guide to the Nature Protection, Rehabilitation and Long-Term Management of Waterways in Western Australia* (WRC 1997-2003):

<http://www.water.wa.gov.au/PublicationStore/first/11173.pdf>

Species selection

Locally native wetland species for the riparian zone of a waterway and dryland species for bushland adjacent to the waterway should be selected for revegetation.

Native species used for revegetation should be selected in consideration of a number of habitat factors including:

- Botanic region;
- Soil type;
- Hydroperiod/flow velocity – within each riparian zone; and
- Salinity/waterlogging.

Sedges and rushes, also known as emergent macrophytes, are vital components of a channel bed and lower-mid sections of the banks of a riparian floodway. They are shallow-rooted and characteristic of permanent to seasonally wet zones with individual species defined by water regime. These plants have an important function in bank stabilisation (slowing water flow and encouraging sedimentation), water quality treatment and provision of faunal habitat. Typical native species of sedges and rushes recommended for revegetation of the riparian zone are presented in Table 6.

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Table 6: Native sedges and rushes recommended for revegetation of the riparian zone

Vegetation type	Botanical name	Typical riparian zone location	Conditions
Bulrushes (native only)	<i>Typha domingensis</i>	Permanently wet or moist sections within the channel bed	Brackish tolerated, seeds require light for germination
Rushes	<i>Juncus kraussii</i>	Lower embankments and outer channel bed	Saline areas Readily germinate in light
	<i>Juncus holoschoenus</i>	Lower embankments	Freshwater Grow in winter wet areas Readily germinate in light
	<i>Juncus subsecundus</i>		Freshwater Readily germinate in light
	<i>Juncus pauciflorus</i>		Freshwater Readily germinate in light
	<i>Juncus pallidus</i>	Mid-upper embankments	Freshwater Readily germinate in light
Sedges	<i>Baumea rubiginosa</i>	-	Require germination in full light and very warm temperatures
	<i>Baumea vaginalis</i>		
	<i>Lepidosperma gladiatum</i>		
	<i>Baumea juncea</i>		Require germination in full light and very warm temperatures Grow in salt-affected areas
	<i>Gahnia trifida</i>		
	<i>Isolepis nodosa</i>		
Southern Rushes	<i>Meeboldina coangustatus</i>	-	Propagation is difficult Seeds require light and fluctuating conditions to break dormancy Germination occurs after the second season
	<i>Meeboldina crassipes</i>		
	<i>Meeboldina roycei</i>		
	<i>Meeboldina thysananthus</i>		
	<i>Desmocladus flexuosus</i>		
	<i>Empodisma gracillimum</i>		
	<i>Leptocarpus tenax</i>		
	<i>Lepyrodia riparia</i>		
	<i>Platychora applanatus</i>		
	<i>Sporadanthus rivularis</i>		
	<i>Taraxis grossa</i>		
	<i>Hopkinsia anoectocolea</i>		
	<i>Hopkinsia adscendens</i>		

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Submergent aquatic plants grow in the channel bed and root in the substrate, usually emerging to the surface during flowering and seed development. These species play a role in slowing stream flow, encouraging sediment deposition and as food and habitat for aquatic fauna. Most species can be grown from seed in full light but are difficult to establish due to their sensitivity to water level changes and turbidity during early establishment. The main species are:

- *Triglochin* (water ribbons);
- *Potamogeton* (pond weed);
- *Otelia* (native lily);
- *Villarsia* (marshworts); and
- *Myriophyllum* (water fern).

Because many submergent aquatic plants are weedy species, it is critical to correctly identify them before using them in a revegetation program. In addition, these species can become weedy in open sunlit shallow waters and therefore careful consideration of their planting location is required.

The South East Regional Centre of Urban Landcare (SERCUL) describes soil types throughout the Perth metropolitan area that relate to native dryland plant species. Woodlupine Creek is located in an area characterised by Eastern Coastal Plain and Scarp soils, and vegetation from the Southern River complex. Some locally native dryland plant species typical of these soils and vegetation complex, and appropriate for use in revegetation of areas adjacent to Woodlupine Creek, are listed in Table 7.

Further information, including more details species lists, is available on SERCUL's website:

<http://www.sercul.org.au/downloads.html>

Commercial availability of native species is a key factor in determining species selection and species listings are provided in this guidance note to provide typical examples only. Selection of currently available species should be undertaken in consultation with a locally experienced botanist. A number of local nurseries stock native plant species including:

- APACE Nursery - 1 Johanna St, North Fremantle
- Carramar Coastal Nursery - Lot 5 885 Mandurah Rd, Secret Harbour
- Lullfitz Nursery - Caporn St (cnr Honey Rd), Wanneroo; 1071 Thomas Road, Oakford
- Men of the Trees - Cnr Amherst Rd/Stirling Cr, Hazelmere; Rockingham Golf Club, Elanora Dr, Coo loongup
- Muchea Tree Farm - Lot 214 Archibald St, Muchea
- Australian Native Nurseries Group - 141 King Rd, Oakford
- Zanthorrea Nursery - 155 Watsonia Rd, Maida Vale

Table 7: Dryland eastern coastal, scarp soil and Southern River complex plant species list

Common name	Botanical name
TREES (> 15 m)	
Jarra	<i>Eucalyptus marginata</i>
Marri	<i>Corymbia calophylla</i>
TREES (< 15 m)	
Fraser's Sheoak	<i>Allocasuarina fraseriana</i>

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Common name	Botanical name
Bull Banksia	<i>Banksia grandis</i>
Red Flowering Gum	<i>Eucalyptus ficifolia</i>
Tallerack	<i>Eucalyptus tetragona</i>
Coastal Blackbutt	<i>Eucalyptus todtiana</i>
Slender Banksia	<i>Banksia attenuata</i>
Firewood Banksia	<i>Banksia menziesii</i>
Flooded Gum	<i>Eucalyptus rudis</i>
Moonah	<i>Melaleuca preissiana</i>
SHRUBS (3-5 m)	
Summer-scented Wattle	<i>Acacia rostellifera</i>
Common Woollybush	<i>Adenanthos cygnorum</i>
Western Bottlebrush	<i>Callistemon phoeniceus</i>
Pink Spike Hakea	<i>Hakea francisiana</i>
Mohan	<i>Melaleuca viminea</i>
SHRUBS (1-3 m)	
Prickly Moses	<i>Acacia pulchella, Acacia urophylla</i>
Lemon Scented Myrtle	<i>Darwinia citriodora</i>
Candle Hakea	<i>Hakea ruscifolia</i>
Grass Tree	<i>Xanthorrhoea preissii</i>
Swamp teatree	<i>Pericalymma ellipticum</i>
Furrowed Hakea	<i>Hakea sulcata</i>
Swamp Cypress	<i>Actinostrobus pyramidalis</i>
Sand Bottlebrush	<i>Beaufortia squarrosa</i>
SHRUBS (< 1m)	
Grass wattle	<i>Acacia willdenowiana</i>
Common Brown Pea	<i>Bossiaea eriocarpa</i>
Wilson's Grevillea	<i>Grevillea wilsonii</i>
Swan River Myrtle	<i>Hypocalymma robustum</i>
White Myrtle	<i>Hypocalymma angustifolium</i>
PERENNIAL HERBS	
Kangaroo Paw	<i>Anigozanthos manglesii</i>
Grey Cottonheads	<i>Conostylis candicans</i>
Morning Iris	<i>Orthrosanthus laxus</i>

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Plant establishment

The use of both tube stock and seed are recommended as part of the revegetation program. Wetland species including sedges, rushes and submergents are recommended for use along the banks of the creek and within the channel bed, and dryland species for use in the bushland areas adjacent to the creek. It is recommended that tube stock and seed species are selected from the list of native plants presented in Table 6 and Table 7 above or from plants listed in SERCUL and Department of Water (previously Water and River Commission) publications.

A combination of plant establishment techniques and timing for planting, depending on location and site condition, is recommended for the revegetation of Woodlupine Creek and is presented in Table 8.

It is recommended that plant establishment is monitored every spring and infill planting of tube stock undertaken at this time if required, in addition to any weed control or mulching required.

Successful revegetation may be determined by an increase in average seedling height between monitoring events, the healthy appearance of tube stock in which the majority of original and replacement tube stock is alive, and a minimal presence of weeds.

Table 8: Summary of plant establishment techniques, location and timing

Plant establishment technique	Location / condition	Timing
Tube stock planting	Embankment and in-stream revegetation Areas that still retain some native vegetation should be planted at a typical density of 1 plant/m ²	Spring/summer – lower embankment Autumn - elsewhere
Direct seeding	Floodplain and upland zones (not on embankment due to high seed losses associated with soil and water erosion) Seeding densities may be determined from a survey of existing vegetation Typical guide: 500:50:5 for herbs/sedges/shrubs/trees per 100 m ² section	Summer/early autumn
Tube stock-seeding combination	In areas of bare soil, high disturbance or too few native vegetation Planting at a typical density of 2 plants/m ² and seed distribution at a rate of 1kg/ha	Spring

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Plant establishment technique	Location / condition	Timing
Transplanting	<p>Only if appropriate donor site available or engineering works require removal of native species that can be transplanted later to the rehabilitated site</p> <p>Usually successful for species with vegetated growth and shallow roots (sedges/rushes)</p> <p>Timing is critical for some species</p>	Winter/early spring (to minimise plant shock)
Pre-seeded matting	<p>Steep embankments – good for erosion control and revegetation in a single stage</p> <p>Involves spreading seeds onto fibremulch (jute matting) and laying mat on-site after germination</p>	Early winter
Brush	<p>All zones except for channel bed</p> <p>Used for brush of bradysporous species (particularly myrtaceous species)</p> <p>Brush collected from plants at seed maturity are secured using upright timber and laid immediately on revegetation site</p>	When plants at seed maturity

Protection

Revegetation areas require protection from animals and human traffic to ensure the survival of native plants. Fencing and signage is recommended to ensure successful revegetation occurs. An additional protection technique is the planting of highly palatable species (such as monocots) under prickly or less palatable species (such as Prickly Moses – *Acacia pulchella*).

Dieback

Managing dieback (*Phytophthora cinnamomi*) in bushland areas is important to minimise the risk of spreading dieback and losing susceptible native plant species.

Management measures recommended to minimise the risk of dieback being introduced and preventing the potential spread of the disease include:

- all tools, equipment and machinery used are cleaned and free of all mud and soil on entry and exit from the site;
- any weeds manually removed are placed immediately in a container to ensure that plant material or soil is not dropped in other areas of bushland;
- revegetation is undertaken when soil is moist but not wet;
- only plants from nurseries with Nursery Industry accreditation are used

General guidelines for managing dieback in bushland areas are described in the Dieback Working Group publication 'Managing Phytophthora Dieback in Bushland Edition 4' (DWG, 2008), available online:

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<http://www.dwg.org.au/go/publications-and-downloads/publications/index.cfm>

Fire management

Control of weed biomass and revegetation using native species will greatly reduce the amount of flammable material. Fire-retardant species such as *Jacksonia viminalis* and native herbaceous monocots around the boundary of the waterway revegetation zone is recommended if possible. Ongoing weed control (slashing/spraying) and provision of appropriate vehicle access points is recommended, however controlled burning in riparian zones is not. Care should be taken in using fire as a management tool as weeds may be favoured over native species.

APPENDIX C: DETAILED COST ESTIMATES



Cost Estimate - breakdown
Woodlupine Creek, Shire of Kalamunda

		EARTHWORKS AND REVEGETATION WORKS																					
		COST SHARE				PRORGAMME WORKS		SECTION A		SECTION B		SECTION C		SECTION D		SECTION E		SECTION F		SECTION G			
ITEM	DESCRIPTION OF WORKS	SoK	WC	UNIT	\$/UNIT	QUANTITY	COST (\$)	QUANTITY	COST (\$)	QUANTITY	COST (\$)	QUANTITY	COST (\$)	QUANTITY	COST (\$)	QUANTITY	COST (\$)	QUANTITY	COST (\$)	QUANTITY	COST (\$)		
1	General																						
1.1	Detailed design	50%	50%	ea	\$ 100,000.00	1	\$ 100,000	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
1.2	Site establishment	50%	50%	ea	\$ 3,000.00	0	\$ -	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000	1	\$ 3,000
1.3	Survey and set out	50%	50%	ea	\$ 2,000.00	0	\$ -	1	\$ 2,000	1	\$ 2,000	1	\$ 2,000	1	\$ 2,000	1	\$ 2,000	1	\$ 2,000	1	\$ 2,000	1	\$ 2,000
2	Site works and Excavation																						
2.1	Clearing and disposal light vegetation (pg. 211)		100%	sqm	\$ 0.35	0	\$ -	65	\$ 23	3580	\$ 1,253	740	\$ 259	2800	\$ 980	1100	\$ 385	2800	\$ 980	1800	\$ 630		
2.2	Cut and fill over site average 0.5/1m - clay soils (pg. 214)		100%	cum	\$ 18.15	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
2.3	Excavated material as filling (on site) (pg. 214)		100%	cum	\$ 6.30	0	\$ -	0.06	\$ 0	110.28	\$ 695	38.70	\$ 244	147.91	\$ 932	74.41	\$ 469	249.50	\$ 1,572	53.01	\$ 334		
2.4	Clean sand filling (pg. 214)		100%	cum	\$ 13.00	0	\$ -	0.00	\$ -	0.00	\$ -	29.85	\$ 388	252.35	\$ 3,281	136.12	\$ 1,770	246.56	\$ 3,205	293.90	\$ 3,821		
2.5	Excavate over site to reduce levels - clay soils (pg. 212)		100%	cum	\$ 19.50	0	\$ -	0.27	\$ 5	127.48	\$ 2,486	38.70	\$ 755	147.91	\$ 2,884	74.41	\$ 1,451	249.50	\$ 4,865	53.01	\$ 1,034		
2.6	Disposal of excavated material - cartage per 25 km (pg. 674)		100%	cum	\$ 14.25	0	\$ -	0.21	\$ 3	17.19	\$ 245	0.00	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
3	Structural works																						
3.1	Excavation foundations for retaining wall - up to 1.5 m deep in clay	50%	50%	cum	\$ 40.80	0	\$ -	0	\$ -	0	\$ -	0	\$ -	92	\$ 3,737	14	\$ 561	42	\$ 1,728	122	\$ 4,984		
3.2	Excavation foundations for retaining wall - 1.5-3 m deep in clay	50%	50%	cum	\$ 44.30	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	244	\$ 10,797	1421	\$ 62,959	0	\$ -		
3.3	Retaining wall (reinforced earth structure)- concrete masonry blocks, split face finish - up to 3m (pg. 676)	50%	50%	sqm	\$ 430.00	0	\$ -	0	\$ -	0	\$ -	0	\$ -	46	\$ 19,692	124	\$ 53,477	275	\$ 118,119	67	\$ 28,814		
3.4	Retaining wall (reinforced earth structure) - concrete masonry blocks, split face finish - 3-6 m (pg. 676)	50%	50%	sqm	\$ 455.00	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	198	\$ 90,072	0	\$ -		
3.5	Backfill for retaining walls	50%	50%	cum	\$ 47.00	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	126	\$ 5,934	989	\$ 46,504	10	\$ 467		
3.6	Disposal of excavated material - cartage per 25 km. for retaining wall (pg. 674)	50%	50%	cum	\$ 14.25	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	117	\$ 1,674	468	\$ 6,671	20	\$ 283		
3.7	Excavation foundations for gabion wall - 1.5-3 m deep in clay	50%	50%	cum	\$ 44.30	0	\$ -	270	\$ 11,947	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
3.8	Gablon construction (rock, labour, geofabric and gablions)	50%	50%	cum	\$ 450.00	0	\$ -	183.5	\$ 82,554	0.0	\$ -	0.0	\$ -	45.8	\$ 20,608	6.9	\$ 3,096	2.2	\$ 997	45.7	\$ 20,566		
4	Riffles																						
4.1	Riffle rock supply (500 mm)		100%	cum	\$ 77.58	0	\$ -	20	\$ 1,552	0	\$ -	37.5	\$ 2,909	40	\$ 3,103	20	\$ 1,552	40	\$ 3,103	40	\$ 3,103	40	\$ 3,103
4.2	Geotextile fabric (under riffle rock) - general purpose mat, mesh size 6 x 6 mm (pg. 677)		100%	sqm	\$ 14.35	0	\$ -	40	\$ 574	0	\$ -	75	\$ 1,076	80	\$ 1,148	40	\$ 574	80	\$ 1,148	80	\$ 1,148	80	\$ 1,148
4.3	Excavation - to remove top soil (clay) and deposit in spoil heaps within 500 m (assume similar rates to construction of riffles)		100%	cum	\$ 7.55	0	\$ -	20	\$ 151	0	\$ -	37.5	\$ 283	40	\$ 302	20	\$ 151	40	\$ 302	40	\$ 302	40	\$ 302
4.4	Disposal of excavated material - cartage per 25 km for gablon wall (pg. 674)		100%	cum	\$ 14.25	0	\$ -	183.5	\$ 2,614	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
4.5	Post and rail fencing**		100%	m	\$ 65.00	0	\$ -	43	\$ 2,798	0	\$ -	0	\$ -	0	\$ -	57	\$ 812	146	\$ 2,076	0	\$ -		
4	Revegetation																						
4.1	Jute mesh - temporary erosion control, where flows not concentrated		100%	sqm	\$ 0.65	0	\$ -	0	\$ -	592	\$ 8,442	216	\$ 140	1086	\$ 706	357	\$ 232	802	\$ 522	587	\$ 381		
4.2	Jute mat - for areas of concentrated water flow^		100%	sqm	\$ 2.55	0	\$ -	13	\$ 33	0	\$ -	10	\$ 26	72	\$ 185	25	\$ 63	33	\$ 84	25	\$ 65		
4.3	Ground cover planting (year 1)		100%	sqm	\$ 7.00	0	\$ -	8	\$ 54	592	\$ 4,147	222	\$ 1,553	1130	\$ 7,907	372	\$ 2,602	822	\$ 5,755	602	\$ 4,215		
4.4	Ground cover planting (year 2) - assume 20% replanting		100%	sqm	\$ 1.40	0	\$ -	8	\$ 11	592	\$ 829	222	\$ 311	1130	\$ 1,581	372	\$ 520	822	\$ 1,151	602	\$ 843		
4.5	Ground cover planting (year 3) - assume 10% replanting		100%	sqm	\$ 0.70	0	\$ -	8	\$ 5	592	\$ 415	222	\$ 155	1130	\$ 791	372	\$ 260	822	\$ 576	602	\$ 421		
4.6	Ground cover planting (year 4) - assume 5% replanting		100%	sqm	\$ 0.35	0	\$ -	8	\$ 3	592	\$ 207	222	\$ 78	1130	\$ 395	372	\$ 130	822	\$ 288	602	\$ 211		
4.7	Ground cover planting (year 5) - assume 2% replanting		100%	sqm	\$ 0.14	0	\$ -	8	\$ 1	592	\$ 83	222	\$ 31	1130	\$ 158	372	\$ 52	822	\$ 115	602	\$ 84		
4.8	Weed control - subgrade areas, 3 times per year (Year 1)		100%	sqm	\$ 2.70	0	\$ -	8	\$ 21	592	\$ 1,599	222	\$ 599	1130	\$ 3,050	372	\$ 1,003	822	\$ 2,220	602	\$ 1,626		
4.9	Weed control - subgrade areas, 3 times per year (Year 2)		100%	sqm	\$ 2.70	0	\$ -	8	\$ 21	592	\$ 1,599	222	\$ 599	1130	\$ 3,050	372	\$ 1,003	822	\$ 2,220	602	\$ 1,626		
4.10	Weed control - subgrade areas, 3 times per year (Year 3)		100%	sqm	\$ 2.70	0	\$ -	8	\$ 21	592	\$ 1,599	222	\$ 599	1130	\$ 3,050	372	\$ 1,003	822	\$ 2,220	602	\$ 1,626		
4.11	Weed control - subgrade areas, 3 times per year (Year 4)		100%	sqm	\$ 2.70	0	\$ -	8	\$ 21	592	\$ 1,599	222	\$ 599	1130	\$ 3,050	372	\$ 1,003	822	\$ 2,220	602	\$ 1,626		
4.12	Weed control - subgrade areas, 3 times per year (Year 5)		100%	sqm	\$ 2.70	0	\$ -	8	\$ 21	592	\$ 1,599	222	\$ 599	1130	\$ 3,050	372	\$ 1,003	822	\$ 2,220	602	\$ 1,626		
4.13	Mulching*		100%	sqm	\$ 7.00	0	\$ -	8	\$ 54	592	\$ 4,147	216	\$ 1,510	1086	\$ 7,604	357	\$ 2,498	802	\$ 5,616	587	\$ 4,108		
4.14	Revegetation - monitoring event (Year 1)		100%	ea	\$ 3,200	2.5	\$ 8,000	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
4.15	Revegetation - monitoring event (Year 2)		100%	ea	\$ 3,200	2	\$ 6,400	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
4.16	Revegetation - monitoring event (Year 3)		100%	ea	\$ 3,200	2	\$ 6,400	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
4.17	Revegetation - monitoring event (Year 4)		100%	ea	\$ 3,200	2	\$ 6,400	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
4.18	Revegetation - monitoring event (Year 5)		100%	ea	\$ 3,200	2	\$ 6,400	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -	0	\$ -
4.51	Signage - revegetation program^^		100%	ea	\$ 250	0	\$ -	1	\$ 250	2	\$ 500	1	\$ 250	2	\$ 500	1	\$ 250	2	\$ 500	1	\$ 250		
Subtotal							\$ 133,600		\$ 107,737		\$ 36,446		\$ 17,965		\$ 96,744		\$ 99,327		\$ 375,007		\$ 89,194		
Adjustment to December 2013						0.01	\$ 1,336	0.01	\$ 1,077	0.01	\$ 364	0.01	\$ 180	0.01	\$ 967	0.01	\$ 993	0.01	\$ 3,750	0.01	\$ 892		
TOTAL COST (exc GST)							\$ 134,936		\$ 108,815		\$ 36,810		\$ 18,145		\$ 97,711		\$ 100,320		\$ 378,757		\$ 90,086		

TOTAL PROJECT COST (exc COST) \$ 965,579
 SHIRE OF KALAMUNDA \$ 529,916
 WATER CORPORATION \$ 435,663

Notes

All rates presented above exclude GST.
 Unit rates used above are based on Rawlinsons Australian Construction Handbook 2013 31st Edition, and industry rates experienced by our past and present clients.
 The estimate of quantities has been prepared through measurement of design and knowledge of the scope of work at the time of preparation. Actual quantities are likely to vary and additional works may be required. Essential Environmental make no guarantee that the schedule above represents the full scope of work required to complete the project.
 Cut and fill volumes are based on Global Mapper calculations derived from existing and design survey.
 Excavation pricing based on a minimum quantity of 500 cum.
 Volume of excavated material for disposal excludes material used for fill. No tip fees have been included. Assume material disposed of at Red Hill Waste Management Facility (distance ~25 km).
 The overall cost estimate above has been prepared for budgeting purposes using best information available at the time of preparation and using reasonable rigour and diligence. Essential Environmental make no guarantee that the expected rates are accurate or that the project can be completed within the budget estimate.
 Assume all material excavated for retaining walls but 1m in depth is disposed of (i.e. retaining wall assumed to have 1 m depth). Retaining walls at 3.5 and 4 m height priced at rates for 1.5/3.0 m deep as on pg 674.
 Gablon rock and riffle pricing based on email from Boral Asphalt (26/05/2014), 150-300mm: \$43.10/tonne and 1.8 tonnes/m3, and 500mm: . Includes delivery to Strelitzia Ave.

It is assumed that gablon walls will be constructed as 1 m³ blocks, and each 1 m³ block will require 6 m² of pre-fabricated steel wire panelling
 Riffles (made of gablon rock) have depth of 0.5 m and all (except in Section B) are 20 m² in area.
 Assume 20% of pond in Section B will be revegetated
 Assume 20% of base channel will be revegetated at 60% density of banks. Sections A-E are 1.5 m wide, Section F-G are 1 m wide.
 Assume revegetation monitoring is undertaken as part of overall project programme works
 It is assumed that geotextile fabric 6 x 6 mm in density over ~5 x 5 m area is laid underneath each of 15 riffles
 *Mulching assumed to be the same rate as groundcover planting. Mulching only applied to banks, not base channel.
 **Estimated based on indicative quote from: www.creativehighways.com.au (27/05/2014)
 (using RL 5 1.8 m posts and RL 5 2.4m rail attached with 8/90/15 tight grip dog wire, all posts concreted and all hard digging included)
 ^Assume 30% of the central channel will be revegetated at half the density of the banks (area obtained from design_roughness.TAB)
 ^^Estimated based on indicative cost of materials. 1 sign per ~100 m.

Revision B
 Date 1/08/2014
 Prepared by H Lamparski
 Checked by K Norris



Client: Shire of Kalamunda

Report	Version	Prepared by	Reviewed by	Submitted to Client	
				Copies	Date
Draft report	V1	KNo/HBr/HLa	HBr	Electronic	May 2014
Final report	V2	KNo/HBr/HLa	HBr	Electronic	August 2014

Essential Environmental

land & water solutions

622 Newcastle St Leederville 6007

p: 08 9328 4663 | f: 08 6316 1431

e: info@essentialenvironmental.com.au

www.essentialenvironmental.com.au

City of Kalamunda Community Engagement 2018 Overview



Overview of Community Engagement for 2018 Calendar Year

True to the City of Kalamunda's long record of strong community engagement, 2018 was another busy, and sometimes challenging year in community engagement.

The importance and value of engaging with our community, seeking to act in a participatory manner in all we do, can never be underestimated. We have maintained strong ties with our environmental community, cultural community and demographic specific groups and believe being in close contact with the pulse of the community leads to good governance and effective decision making.

In 2018 The City of Kalamunda engaged with community on range of issues, events, planning and community issues.

Our engagement ranged from surveys seeking the opinions of residents in relation to preparing for natural hazards, to traffic treatments, urban, industrial and park designs, to collaborative development of community strategy and much more.

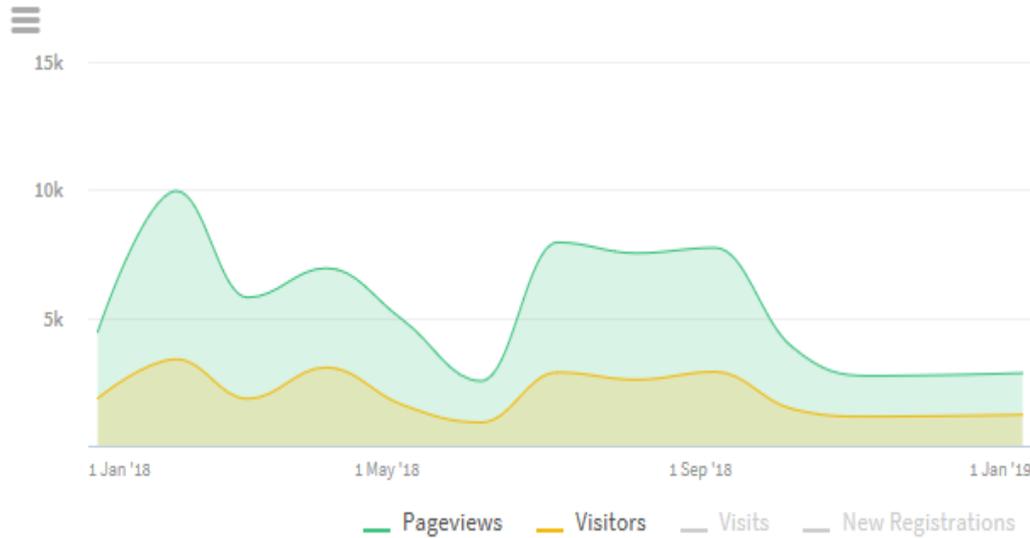
City of Kalamunda utilises the engagement portal 'EngageHQ' to raise awareness, inform and engage community members in discussion and gain feedback on issues affecting the City. Engage Kalamunda provides an opportunity for the community to see available information for major projects, policies, plans and issues and to get involved in the process. This is key to the City of Kalamunda Engagement Strategy, as the City is committed to providing our community members with opportunities to be informed, participate, engage and contribute to issues affecting individual and the wider community.

Total Visitor Summary from January 2018 up to and including December 2018

Visitors Summary

Engage Kalamunda from 01 Jan'18 to 31 Dec'18

DAILY MONTHLY



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	NEW REGISTRATIONS
27.6 k	395	1.5 k
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
1.3 k	8.1 k	17.8 k

Peak Engagement Times in 2018: February, April, July and September

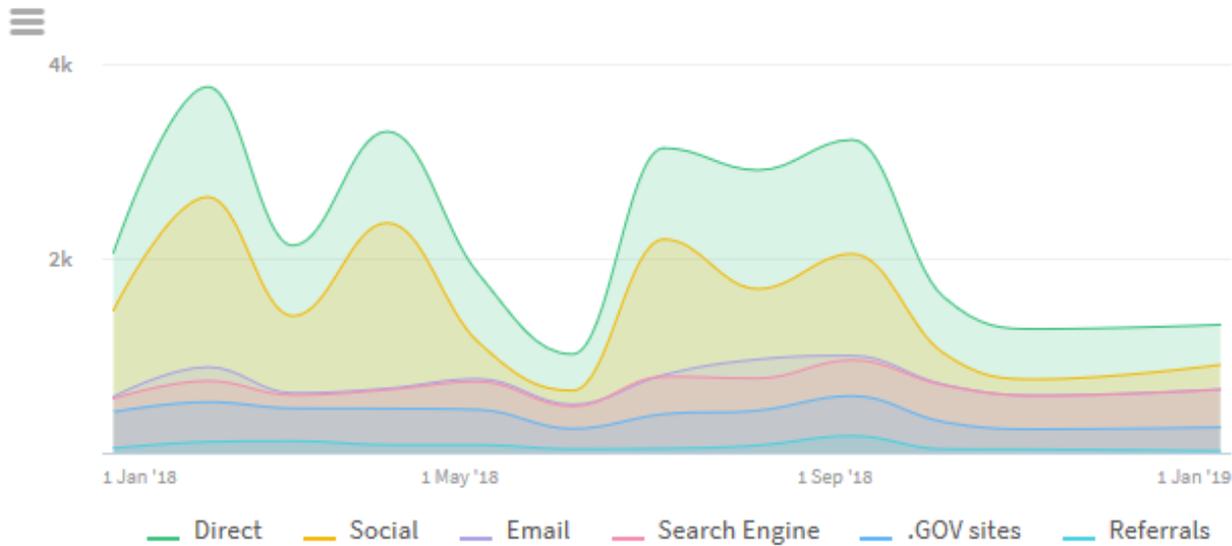
Overview of Community Engagement for 2018 Calendar Year

SOURCES OF TRAFFIC

Visits by Channel

Engage Kalamunda from 01 Jan'18 to 31 Dec'18

DAILY MONTHLY



TRAFFIC CHANNEL	AWARE VISITS	INFORMED VISITS(%)	ENGAGED VISITS(%)
DIRECT	9315	4187 (44.9%)	1164 (12.5%)
SOCIAL	9554	3316 (34.7%)	159 (1.7%)
EMAIL	519	277 (53.4%)	66 (12.7%)
SEARCH ENGINE	3398	1434 (42.2%)	94 (2.8%)
.GOV SITES	3920	2135 (54.5%)	219 (5.6%)
REFERRALS	857	413 (48.2%)	31 (3.6%)

Social Media generated the highest number of visits, however, direct engagement resulted in the highest percentages of informed and engaged participants across the spectrum of projects.

Top engagement Projects for the 2018 Calendar Year – Engaged (Participated Survey/Polls/Stories)

ENGAGED	1,325 ENGAGED PARTICIPANTS			
	Registered	Unverified	Anonymous	
INFORMED	Contributed on Forums	8	0	0
	Participated in Surveys	1,299	0	16
	Contributed to Newsfeeds	0	0	0
	Participated in Quick Polls	0	0	7
AWARE	Posted on Guestbooks	0	0	0
	Contributed to Stories	2	0	0
	Asked Questions	1	0	0
	Placed Pins on Places	2	0	0
	Contributed to Ideas	7	0	0

Engaged Level: Total 1325 Engaged Participants

Top Projects

	Participants (%)
• Hale Road/Woolworths Drive Improvement Project	165 (18.1%)
• Name the Suburb Competition	137 (9.8%)
• Development Applications	133 (3.2%)
• Kalamunda Skate Park	110 (17.6%)
• Kalamunda Road / Newburn Road / Chipping Drive Intersection Upgrades	99 (16.6%)
• Wattle Grove South - Visioning & Values	85 (31.8%)
• Bicycle Plan 2017	71 (4.6%)
• Draft Industrial Development Strategy	67 (6.7%)

Top engagement Projects for the 2018 Calendar Year – **Informed** (Visited multiple pages/FAQ/Dates)

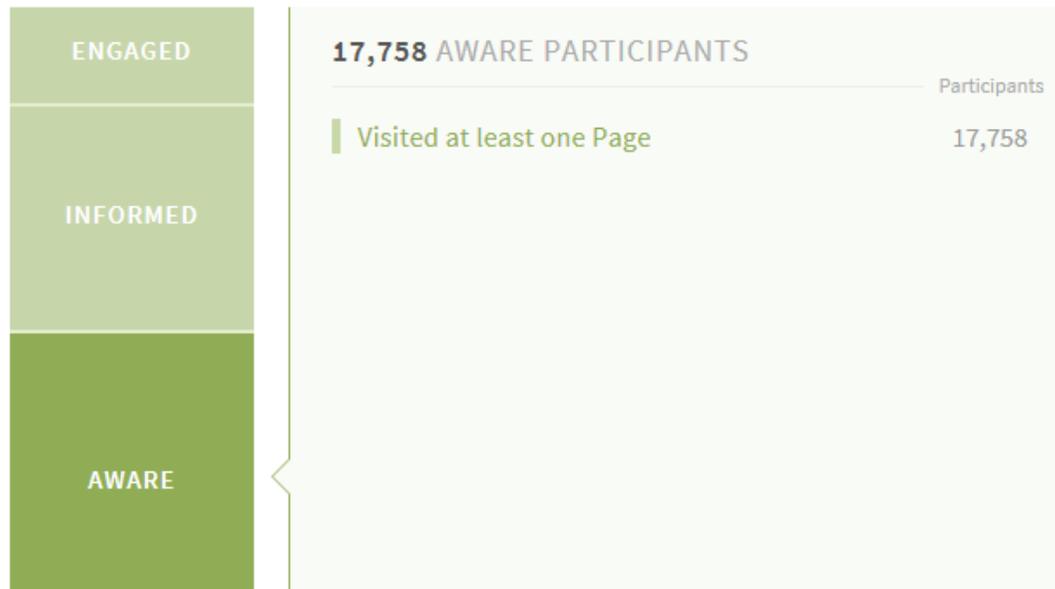


Informed Level: Total 8,100

Project	Participants (%)
Development Applications	1,067 (25.8%)
Bicycle Plan 2017	1,021 (65.8%)
Name the Suburb Competition	687 (49.4%)
Draft Industrial Development Strategy	639 (63.6%)
Local Structure Plan - Forrestfield North: Residential Precinct	613 (61.9%)
Maida Vale Reserve Master Plan	532 (46.3%)
Hale Road/Woolworths Drive Improvement Project	509 (55.9%)
Cambridge Reserve Enhancement: Concept Design	507 (50.8%)

➤ 3648 Downloaded Documents and 6448 views of multiple pages

Top engagement Projects for the 2018 Calendar Year – **Aware** (visited at least one page of Project)



Aware Level: Total 17,758

- Development Applications
- Bicycle Plan 2017
- Name the Suburb Competition
- Maida Vale Reserve Master Plan
- Draft Industrial Development Strategy
- Cambridge Reserve Enhancement: Concept Design
- Local Structure Plan - Forrestfield North: Residential Precinct
- Hale Road/Woolworths Drive Improvement Project

Participants

- 4,138
- 1,551
- 1,392
- 1,150
- 1,004
- 998
- 990
- 911

Areas of high community interest – Engage HQ Project

Top 3 Newsfeeds based on Visitors

Newsfeed Total Visitors 3778

- Proposal for clearing of Vegetation and Educational Establishment 200 Lesmurdie Road 922
- Proposal for Place of Worship 28 Lewis Road, Lesmurdie 498
- Proposed Local Development Plan Lot 500 Gavour Road, Wattle Grove 436

Top 3 Key dates based on number of views by community

Key Dates Total Views 348

- Draft Industrial Development 61
- Wattle Grove South – Visioning and Values 32
- Local Structure Plan – Forrestfield North 34

Top 3 documents based on downloads from the community

Document Total Visitors 3650

- 2017 Bicycle Plan – Summary Report (Released 2018) 1102
- Cambridge Reserve – Concept Design 380
- Local Structure Plan – Forrestfield North 354

Top 3 FAQ'S Based on Views by the community

FAQ's Total Visitors 1290

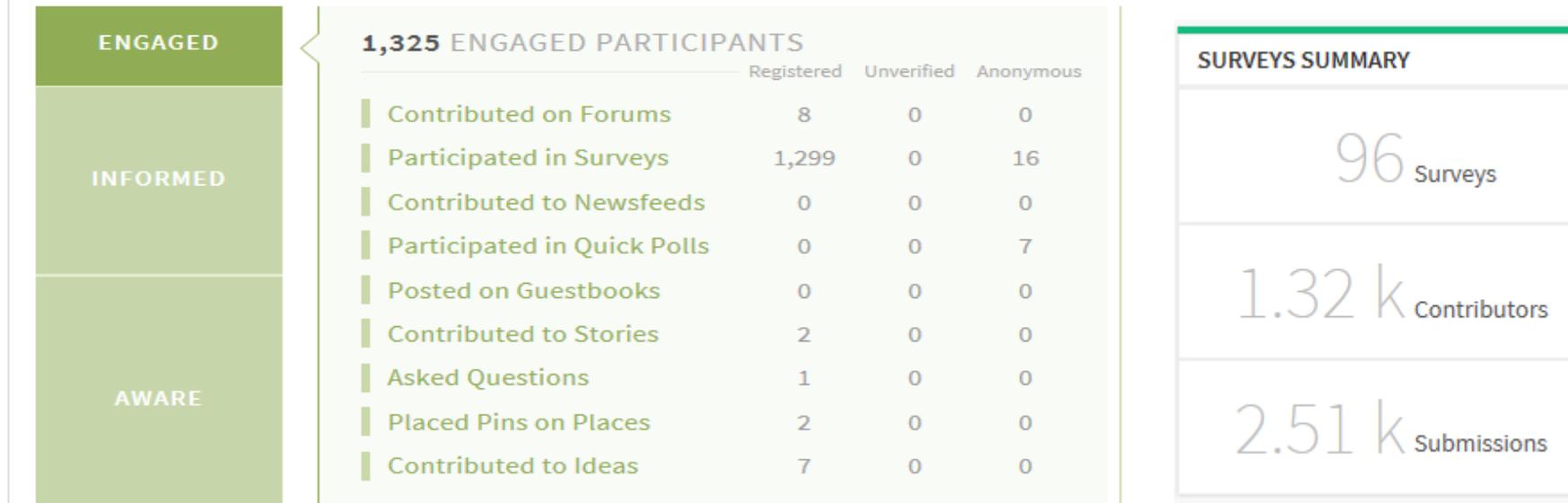
- Hale Road / Woolworths 214
- Local Structure Plan – Forrestfield North 209
- Maida Vale Reserve Master Plan 137

Engagement, Media, Public Promotions and advertising

A diverse range of media and communication tools are utilised to promote, inform, engage and help to activate our community. This is to assist the City of Kalamunda reach, inform, and involve our residents in community events, policy development and decisions that affect their lives.

- ❖ City of Kalamunda Website
- ❖ Engage Kalamunda Website (Engage HQ)
- ❖ Community Survey (Engage HQ)
- ❖ City of Kalamunda Facebook Pages
- ❖ Kalamunda Libraries Facebook Page
- ❖ Monthly e-news
- ❖ LinkedIn
- ❖ Local Events
- ❖ City of Kalamunda personnel
- ❖ You Tube
- ❖ Community networks, services and partners
- ❖ Promotional Flyers
- ❖ Direct Mail
- ❖ Newspaper / Digital Newspaper Promotions:
 - Midland/Kalamunda Reporter (digital only) 28,886 total monthly reach – High Wycombe, Maida Vale, Kalamunda, plus Midland area.
 - Hills/Avon Valley Gazette (digital only) 29,830 total monthly reach – High Wycombe, Maida Vale, Forrestfield, Kalamunda, plus Glen Forrest etc.
 - Southern Gazette (Hardcopy paper) 56,370 total monthly reach – High Wycombe, Forrestfield, Kalamunda, and several suburbs East of airport.
 - Echo News (Hardcopy paper + website) Cities of Swan and Kalamunda, Shires of Mundaring, York, and Northam & Town of Bassendean.

Community Surveys - Participant Summary

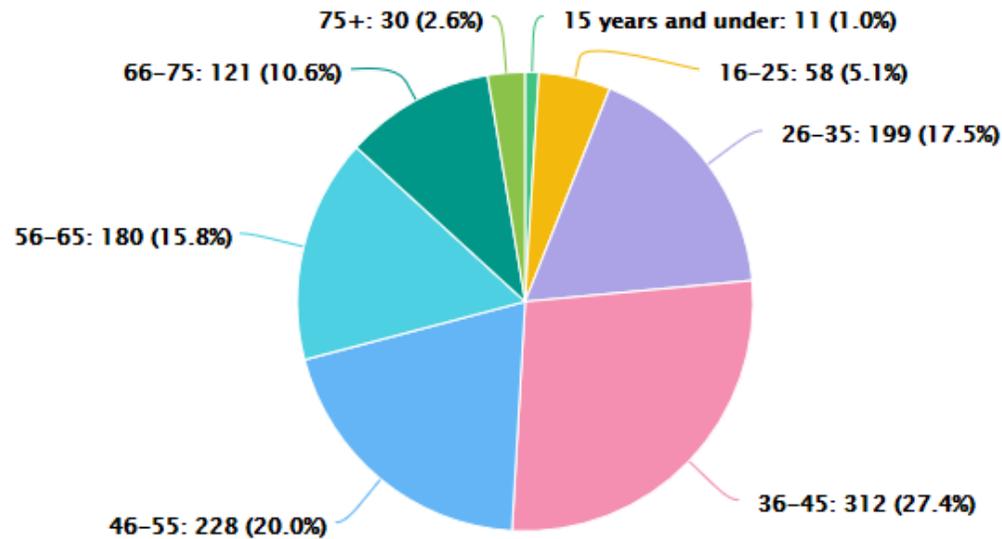


96 Surveys were published by the City of Kalamunda, which generated 1,315 survey responses from the community and 2510 submissions, with 5749 visitors to the Survey sites.

Top 6 Surveys based on contributions were:
(Gross 5749)

	Surveys	Visitors to site
• Hale Road/Woolworths Survey	165	657
• Name that Suburb Competition Survey	137	547
• Kalamunda Skate Park Survey	110	324
• Kalamunda Road/ Newburn/ Chipping Upgrades Survey	99	439
• Wattle Grove South Visioning and Values Survey	85	164
• Bicycle Plan Survey	71	581

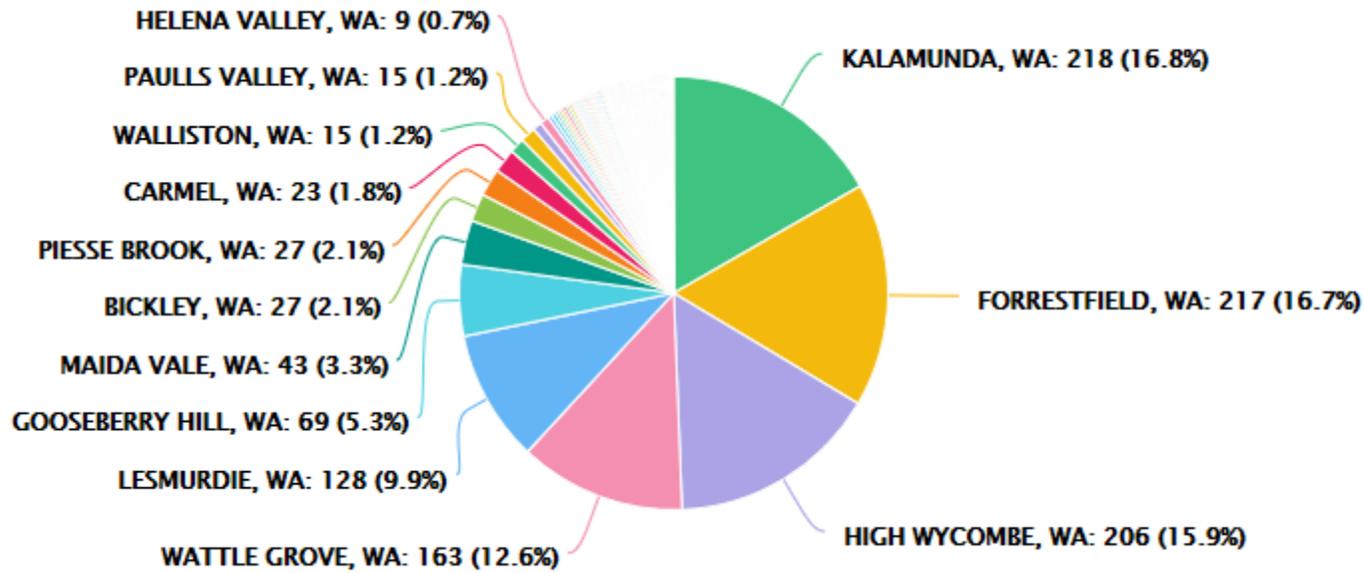
Age bracket of community Survey participants



Demographics: 58.3% Female and 41.7% Male

1%	15 years and under
5.1%	16 – 25 years
17.5%	26 - 35 years
27.4%	36 – 45 years
20.0%	46 – 55 years
15.8%	56 – 65 years
10.6%	66 – 75 years
2.6%	75 + years

Percentage of engagement by Suburb through the survey tool



Highest survey participation by suburb

Kalamunda	16.8%
Forrestfield	16.7%
High Wycombe	15.9%

A full suburb breakdown is as follows:

Anonymous	01.2%
Bickley	02.1%
Forrestfield	16.7%
Gooseberry Hill	05.3%
Helena Valley	00.7%
High Wycombe	15.9%
Kalamunda	16.8%
Lesmurdie	09.9%
Maida Vale	03.3%
Pauls Valley	>00.7%
Pickering Brook	>00.7%
Hacketts Gully	>00.7%
Piesse Brook	02.1%
Wattle Grove	12.6%
Walliston	01.2%

Remainder were made from other Suburbs less than > 0.7% included other suburbs such as Armadale, Ahsfield, Aveley, Balcatta, Bassendean, Henderson and Kelmscott.

Bicycle Plan 2017: Engagement February – March 2018

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
78	2100	229	93	71	1000	1600	884

The Bicycle Plan proposed cycling infrastructure grouped by dedicated Principal Shared Paths, strategic routes, local routes, training routes, and Safe Active Streets. The Bicycle Plan also proposed education and awareness programs to support the delivery of infrastructure and encourage the community to ride bicycles.

The community engagement process included promotion of the Plan through media releases and advertisements, hard copies of the plans in public facilities, promotion through social media, and online submissions on the Engage Kalamunda portal.

There were several additional engagement opportunities occurred including pop-ups held at Forrestfield Forum, Hartfield Park and a Conversation Café at 42 On Haynes. The Bicycle Plan was advertised from 12 February to 13 April 2018.

A total of 78 submissions were received. Many of the submissions addressed specific projects, and these responses will be considered as the respective projects commence. There was a high level of concern and feedback raised for the safety of the training routes and affected areas, this prompted the need to provide more information and priority to the training routes for safety and shared use.

Outcome: October 2018: The Bicycle Plan 2017 was adopted by Council at the June Ordinary Council Meeting 2018.

During 2018/2019 the City will be working on the following projects from the Bicycle Plan:

- Consultation on options for improving cycling and pedestrian access to the Zig Zag Scenic Drive
- Design and consultation on a local cycling route through High Wycombe including the public access ways from Mac Larty Way to Newburn Road, and a route along Butcher Road, Palmer Crescent and Mack Place through to Maida Vale Road.



Name that Suburb Competition: Engagement

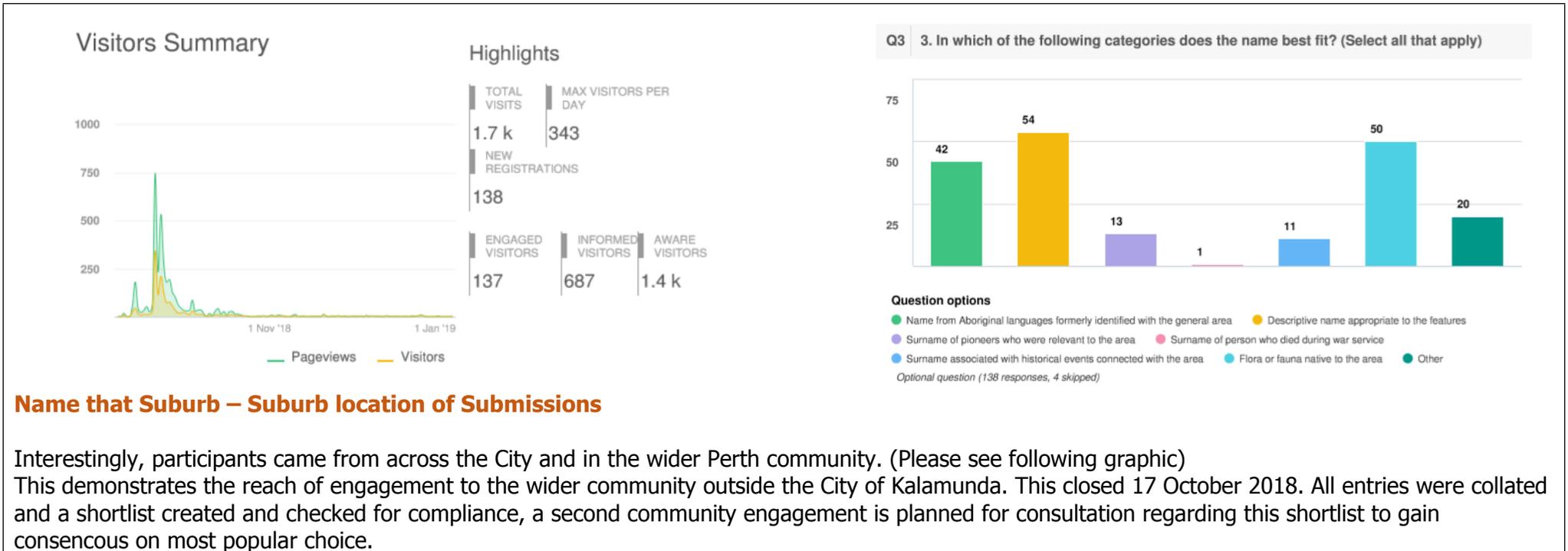
Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
142	240	343	138	137	687	1400	388

The City of Kalamunda opened a competition to name the Forrestfield North District Structure Plan Precinct. The area, which is bound by Berkshire Road, Roe Highway and Poison Gully Creek in Forrestfield and High Wycombe, as it is poised for a major transformation with the new train line scheduled for opening in 2020 and rezoning plans currently underway.

This project attracted 142 Submissions, generated 240 downloads and had 1392 view the page. The submission demographics saw a higher level of females engaged, 83, than 39 men. Naming suggestions were largely driven from the environment with 54 derived from a descriptive name appropriate to the area, closely followed by 50 from flora and fauna, followed by 42 derived from local aboriginal name, forming a unique connection to the area.

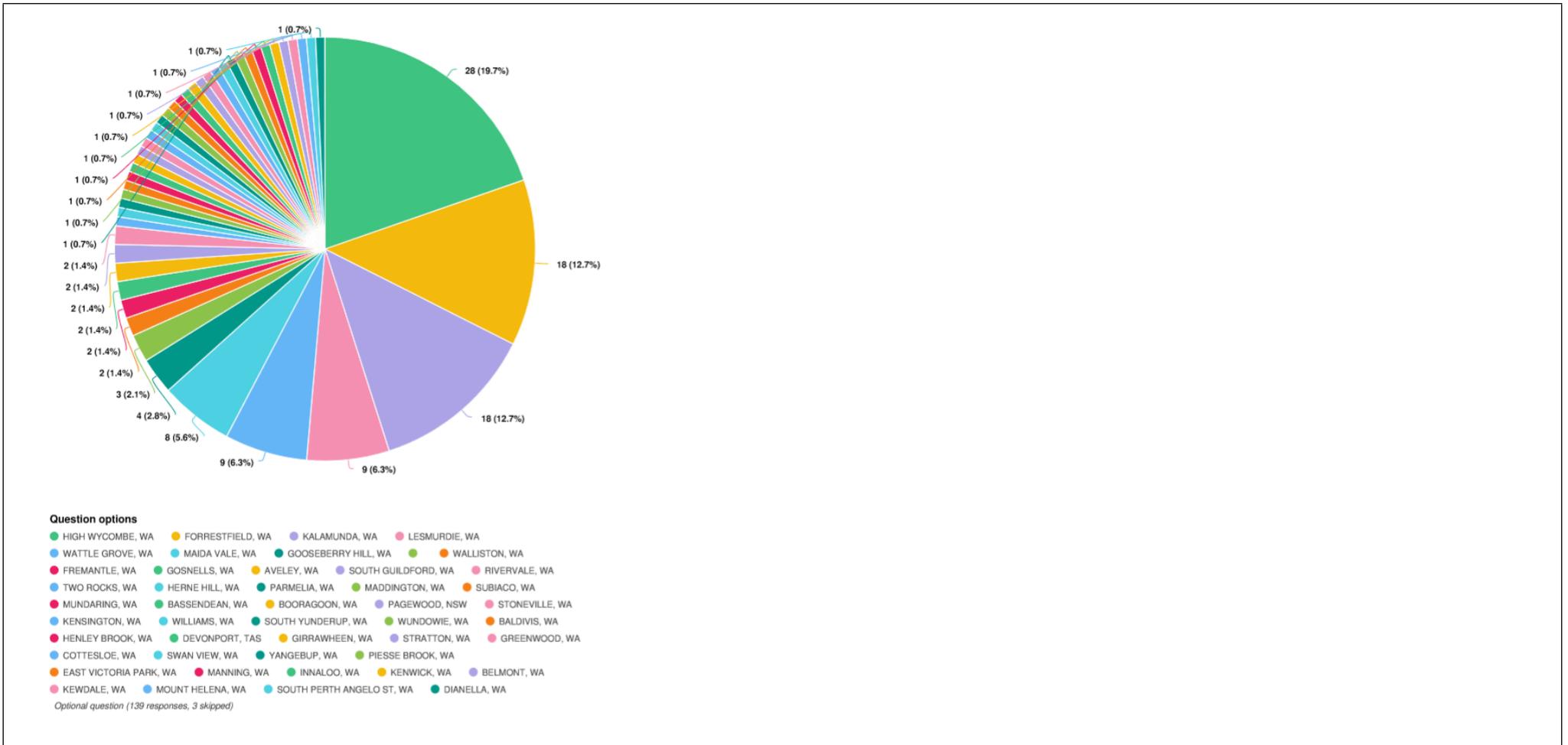
The demographics of those participating, highest levels of engagement was from the 36 to 45 years (40), closely followed by the 26 -35 year old (33), however the ages spanned from 15 or younger (6) to over 76 years of age (6).

Outcome: Following community consultation and endorsement, the name of a suburb must be approved by Council followed by Landgate on behalf of the Minister for Lands.



Name that Suburb – Suburb location of Submissions

Interestingly, participants came from across the City and in the wider Perth community. (Please see following graphic)
 This demonstrates the reach of engagement to the wider community outside the City of Kalamunda. This closed 17 October 2018. All entries were collated and a shortlist created and checked for compliance, a second community engagement is planned for consultation regarding this shortlist to gain consensus on most popular choice.



Draft Maida Vale Reserve Master Plan & Revised Master Plan

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
86	1400	193	48	54	53	1200	305

Maida Vale Reserve is an important asset for the community. The City of Kalamunda investigated how best to make use of the precinct to accommodate a range of sporting and community uses in ways that recognise its value as a community asset and, at the same time, as a local centre for participation in sport, community and leisure activities, along with the established environmental area. Consultancy company, ABV Leisure Services Consultancy was appointed by the City to prepare the master plan and undertake community consultation. There was a good response from the community, with high number of visitors to the project's engagement portal, over 80+ survey responses and submissions, as well as direct input from the sporting clubs, groups and residents during the comment period

- Drop in Sessions at Norm Sadler Pavilion & Maida Vale Reserve
 - Sport Ground pop ups
 - User group Survey issued.
 - Engage HQ and Community Survey
 - Engagement promotion at community events
- Community Workshop at Norm Sadler Pavilion
Stakeholder meetings and interviews
Local homes were mail dropped.
Social Media & City Website
Information from Cultural, Rec & Library Centres

The draft master plan was endorsed for public comment in July 2018, with the community engagement process concluding on 31 August 2018, with 250 visitors to the project's engagement portal, over 80 survey responses and submissions, as well as direct input from the sporting clubs, groups and residents during the comment period. Through engagement, Community members provided feedback, which resulted in the team reviewing several parts of the draft master plan. In particular, a majority of comments related to the proposed location of the tennis club; the proposed relocation of the skate park; and the expansion of the car park and proposed new car park access road. Based on this information and feedback from community, the City revised the plan to ensure the retention of the tennis club facilities and the skate park in their current locations, a reduced car park area with additional vegetation screening as a buffer for adjoining properties, and removal of the rear access road.

To confirm that the *Revised Master Plan* had captured the latest feedback, sporting clubs, nearby residents and the wider community were invited to an additional community workshop in late September 2018. The Community Presentation on Consultation findings was a community presentation workshop was held at Norm Saddler Pavilion on Wednesday the 19th of September at 6:00pm.

Outcome: Following presentations/discussions, feedback indicated there was strong support from the Maida Vale Tennis Club, Kalamunda United Soccer Club, Kalamunda Rangers, other key user groups /nearby residents for the *Revised Plan*. *The revised plan was prepared included: the retention of the tennis club facilities in their current location; b) the retention of the skate park in its current location, with an upgrade at the end of its useful life; and c) a reduced car park area, additional vegetation screening and tree buffers adjoining properties, and removal of the rear access road to the future car park.*

Council voted unanimously to adopt a Revised Master Plan at its December 2018 Ordinary Council Meeting. The site is environmentally significant, and this was a key focus in the design.

Draft Industrial Development Strategy:

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
82	452	183	47	67	639	1000	737

The aim of the community consultation was to seek feedback on the Draft Industrial Strategy and to determine how industrial areas, both existing and new, can be made into appealing places to do business. The City engaged with the public through online engagement, community workshops, industry working groups, online surveys and pop-ups at local shopping precincts.

Focus Group: The City wrote to all industrial land holders in the City of Kalamunda and potentially interested community groups or members, inviting them to nominate to be a part of an Industrial Focus Group. From this, the Group was formed, comprising 15 members, representing various businesses, groups, government departments and land holdings. Two City Planning Officers were also in attendance. A Focus Group Meeting was held at the Zig Zag Cultural Centre in Kalamunda on 16 August 2018 from 5pm, running for approximately 2 hours.

The **Community Workshop** was originally scheduled to take place on Thursday, 23 August 2018, but was rescheduled to Monday, 1 October 2018 to allow further consultation to take place. The workshop was advertised through the provision of flyers at all City locations, newspaper advertisements, a letterbox drop to residents in the Wattle Grove South precinct, information on the City's website and engagement portal and emails to registered participants.

The workshop took place at Lesmurdie Hall from 6pm, with over 90 community members in attendance. A number of Councillors and staff were also present. Attendees were invited to sit in small groups (approximately five to 10 persons) around the room. This was to ensure that each individual had the time and opportunity to share their input during the activity sessions.

Survey: The Draft Industrial Strategy survey was made available for the community both online and in hard copy. 82 completed surveys were received.

Shopping Centre Pop Ups: Kalamunda Central Shopping Centre Pop Up: 1st August, Forrestfield Forum Pop Up: 08 August 2018, High Wycombe Shopping Centre Pop Up: 27 August 2018

Wattle Grove South: Due to high levels of community engagement on the inclusion of Wattle Grove South as a region of Industrial Investigation, and to gain a shared understanding on the purpose of the Industrial Investigation Area is, the the City encouraged residents to share their views on the inclusion of this region as an Industrial Investigation Area and the Strategy was extended to allow for greater public comment until the **30 of September, 2018.**

Draft Industrial Development Strategy:

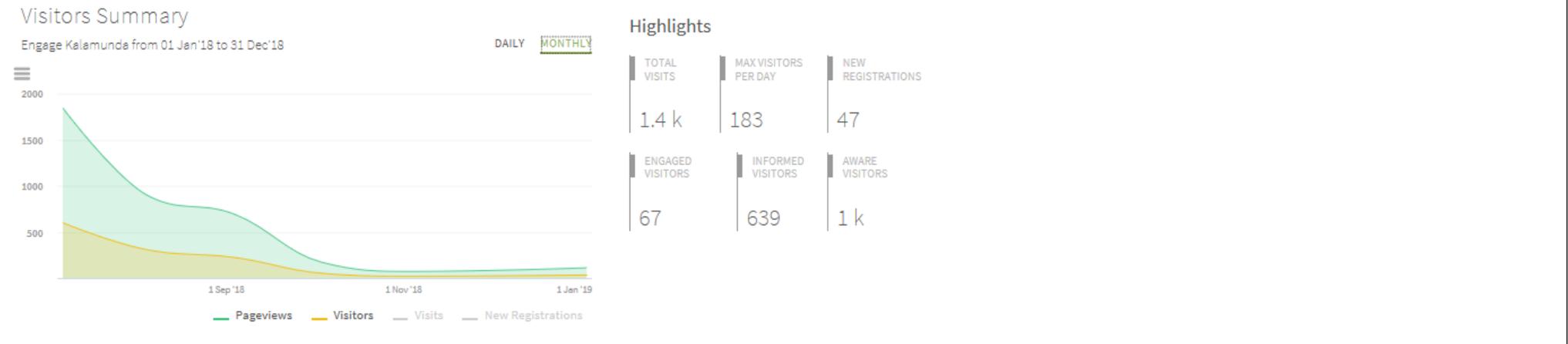
Summary: Across the various consultation mediums, it is understood that transport infrastructure and a neat and tidy appearance are the key aspects to making an area an appealing place to do business. Second to this are amenities such as parking, cafes and gyms, and the preservation and integration of environmental values.

Many of those already invested in the industrial realm see the City as an ideal location for industrial development, given its prime location next to all kinds of transport infrastructure (airport, rail networks, road networks and close to the City). Also, because of its large block sizes, which is an option that is lacking for some industrial operators. This is important to note, as many in this realm believe there is an oversupply of smaller industrial lots and see little use in creating more.

A majority of those in attendance at the Focus Group gave positive feedback in relation to the Consultation experience, noting it was a good initiative of the City and they found it worthwhile.

The Community workshop saw a high percentage of attendees from Wattle Grove, a majority of resident attendance sited this are a poor location for industrial development, given its environmental values and the personal preference of the individuals that live in the area, many of whom noted they live in this location for lifestyle reasons. This subsection would prefer to see Wattle Grove South, which is identified as urban investigation, removed from the Draft Industrial Strategy.

Across most consultation mediums, there was a significant portion of Wattle Grove South residents participating. As such, the outcomes are most likely to largely reflect the values of this subsection of the community as opposed to the community as a whole.



Outcome: The Industrial Development Strategy was adopted by Council 3 December 2018. Officers removed Wattle Grove from the Strategy based on the feedback from the Community.

Cambridge Reserve Enhancement: Concept Design: July 2018 –August 2018

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
88	1200	95	47	64	507	998	463

In February 2018, the City undertook community consultation and gained community feedback, thoughts and vision for the reserve. The City had strong response from the community, with over 60 residents providing input. This feedback was then incorporated into a draft concept design for the reserve. This Concept Design Engagement sort to gain further feedback from community to prior to the concept plan being finalised and put to Council for consideration and approval. The Concept Design was promoted through City Events, Online, the City Website, letters were sent to residents near the location and consultation culminated in the Workshop held on the 01 August 2018. Attendees learnt more about the Concept Design and were invited to share their thoughts. This was held at Woodlupine Family & Community Centre, 88 Hale Rd, Forrestfield, 5.30pm - 7.00pm. This information was then collated and helped to inform the final concept design.



Outcome: The Concept Plan was reviewed based on the community feedback and went to Council in February 2019. A scheme amendment process will now commence. Pending all approvals, the finalised plans will be put forward to the Minister for Lands and Western Australian Planning Commission for endorsement.

Local Structure Plan – Forrestfield North: Residential Precinct

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
32	1400	60	25	23	613	990	892

In 2017, the City of Kalamunda sought community feedback to help guide the development of Local Structure Plans for three key spaces; Forrestfield Station Transit Oriented Development (TOD) Precinct, the Forrestfield North Activity Centre Precinct, and the Forrestfield North Residential Precinct. There was a large volume of interest from the community, with input from over 400 residents. From this information the development of a Draft Local Structure plan took place. This was completed for the Forrestfield North Residential Precinct opened for public comment in May 2018. Key features of the plan include medium-high density residential zonings from R60 to R100, new road connections, local open space and drainage reserves, a community hub and primary school.

Community Engagement commenced in May and concluded on the 2 July, 2018. Community were engaged through **online information resources** and **engagement tools, Information sessions** were held at High Wycombe Library on the 21 May and the 23 May, with a total of 32 submissions received. On the 13th and 18th of June 2018, **two Community Workshops** were conducted as an interactive session, designed to provide community members with an opportunity to share their thoughts and feedback on the Local Structure Plan for the Forrestfield North Residential Precinct at High Wycombe Community and Recreation Centre and at the Where: Woodlupine Family Centre.

Outcome: At the Special Council Meeting held 3 December 2018, Council endorsed the Forrestfield North Residential Precinct Local Structure Plan in accordance with the modifications included in Attachments 3, 4 and 5.

Visitors Summary

Engage Kalamunda from 01 Jan '18 to 31 Dec '18

DAILY MONTHLY



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	NEW REGISTRATIONS
1.4 k	60	25
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
23	613	990



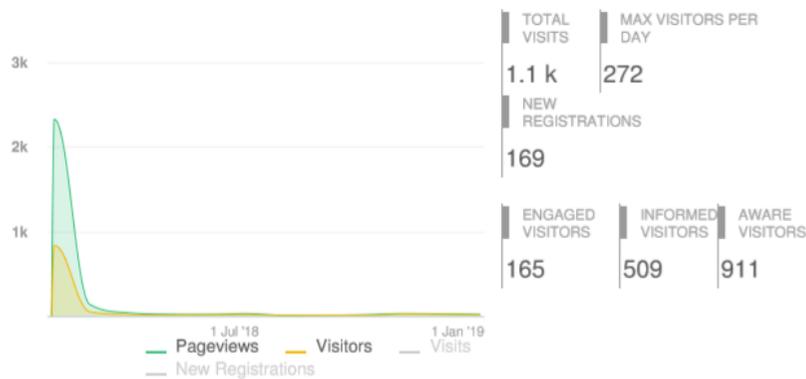
Hale Road/Woolworths Drive Intersection Improvements: March 2018

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
183	1100	272	169	165	509	911	0

Community concern has been raised about accessibility from Woolworths Drive onto Hale Road, including queueing and associated delay, along with road safety issues in relation to access to and egress from Woolworths Drive. The City sought to provide this traffic improvement project to improve congestion and increase road user safety at this busy intersection. Traffic engineers developed several potential road improvement options for the community's consideration. The City engaged a traffic consultant (Consultant) to examine the situation in the area around Hale Road, Woolworths Drive, Hanover Street and Strelitzia Avenue. The Consultant developed three primary schemes of potential improvements: a) channelisation and median works; b) roundabouts; and c) traffic lights

The City undertook community consultation during February 2018 on these options, with 177 submissions received. The responses showed: a) 37.3% preferring a Roundabout with full access to Hanover Street maintained; b) 29.4% preferring a Roundabout, with left in / left out access to / from Hanover; c) 25.4% preferring installation of Traffic Signals; d) 7.9% preferring modifications to channelisation (i.e. kerbing, line marking and median islands).

Visitors Summary



Outcome: Council noted community consultation outcomes, Main Roads preferred solution and alternate proposal of design by the City of Kalamunda. Council requests further design development of the options to address the matters raised in the Road Safety Audit and that the City of Kalamunda undertake further negotiations with Main Roads Western Australia with the support of State and Federal Members of Parliament to seek Main Roads Western Australia concurrence to the mini roundabout solution and report back to Council.

Welshpool Road East: Gum Trees (Wattle Grove): March - May 2018

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
	831	130	1	1	45	753	

On 10 June 2015, the Minister for Planning Approved Scheme Amendment No. 61 which included the additional use of Place of Worship under Schedule 2 of the Scheme. The additional was conditional on the applicant/landowner preparing and implementing a traffic management plan. The subject site has frontage of 115m to Welshpool Rd East.

In late 2016 an application as approved for a place of worship at Lot 36 (831) Welshpool Road East, Wattle Grove (OCM 184/2016). A component of this application included a 95m long slip lane within the west-bound portion of the Welshpool Road East Regional Reserve, which would have resulted in the removal of up to 13 existing trees.

During, and since, September 2017 the City received a significant number of enquiries from the community regarding the subject place of worship and concern about the potential removal of lemon scented gum trees adjacent to the subject site, which led to the Council, and the City's officers, reconsidering options regarding the existing approval and access arrangements.

The City, Main Roads WA and the applicant met in late 2017 to address how the approved design could be modified to mitigate the removal of trees. The outcome of the meeting resulted in agreement to reduce slip lane lengths and tighten up lane widths to absolute minimum standards. The Public Transport Authority advised that it supported the inclusion of the bus stop within the left slip lane as modified on condition that the existing facility is upgraded to reflect current bus stop standards.

Outcome: Council has approved an Application to Amend Development Approval – Place of Worship – Lot 36 (831) Welshpool Road East, Wattle Grove from the St Peters Jacobite Syrian Church Perth Inc at a Special Council Meeting on 17 April 2018, with a series of conditions. The revised design provided an allowance for the bus embayment to be included within the shortened westbound slip lane. The modifications to the design for both slip lanes and proposed upgrading of the existing bus stop has reduced the original requirement to remove 13 trees to only one, with this being a smaller tree located in the central median where the proposed right slip lane is to be located. Other trees will require careful monitoring and assessment to determine any potential impact of roadworks and an independent arborist report will be prepared during construction works as per one of the conditions for the revised development.

The City has undertaken investigations to:

- Inform the options available and cost for the City of Kalamunda (the City) to establish local heritage status of the Avenue of Lemon Scented Gums (the Trees) along Welshpool Road East.
- Investigate the option to include the Trees on the City's Municipal Heritage Inventory (MHI).
- Investigate the option to include the Trees within a Heritage Area and prepare an accompanying Local Planning Policy (LPP) for the Trees



Public Open Space Strategy: February 2018

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
88	861	92	60	60	391	673	226

The Public Open Space Strategy (the Strategy) will form a key component of the City's new Local Planning Strategy 2018 and outline the strategic direction for the City's recreational facilities and social spaces.

The City consulted with community, to understand their future requirements and aspirations for public open spaces. Consultation aimed to understand what the community's expectations and aspirations for public open spaces. Engage a range of stakeholders and community members that have an interest in the Strategy.

Engagement: Public advertising took place between December 2017 and February 2018. Engagement included:

- 2 x Community Workshops: 15 & 17 February 2018
- 5 x Community Pop Ups (2 x W/Wycombe/ Kalamunda/ Forrestfield)
- Engage HQ and Community Survey
- Social Media & City Website
- Engagement promotion at community events
- Information from Cultural, Rec & Library Centres

Outcome: It was recommended that Council grant final approval to the Strategy subject to a series of modifications in response to community consultation. The Strategy will form a component of the City’s new Local Planning Strategy, which will be progressed throughout 2019.

Visitors Summary



Highlights

TOTAL VISITS	861	MAX VISITORS PER DAY	92
NEW REGISTRATIONS	60	ENGAGED VISITORS	60
		INFORMED VISITORS	391
		AWARE VISITORS	673



Kalamunda Skate Park – April 2018

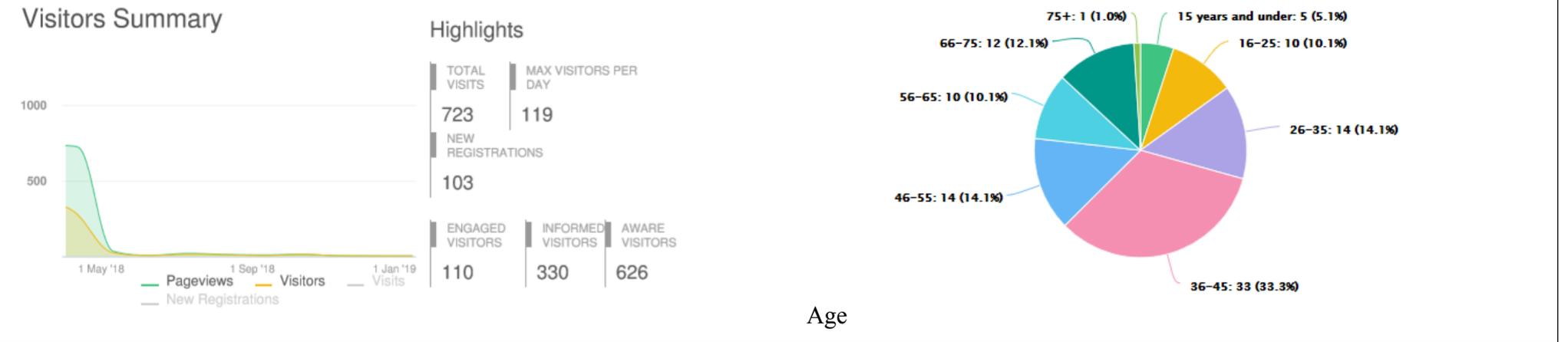
Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
243	723	119	103	110	330	626	0

At the Ordinary Council Meeting held on the 28 November 2017, a youth driven petition seeking the inclusion of a Skate Park into the Stirk Park Master Plan, with 187 signatures was presented to Council. In response to the petition the City undertook further community engagement over a 30-day period.

This engagement sought community support the relocation of the skate park to Stirk Park, where the facility could be incorporated into the Stirk Park Masterplan (subject to Council endorsement). Engagement was undertaken through Social Media, Engage HQ, hardcopy survey, and community discussion at events and community locations. It attracted a large number of submissions that was drawn across all age groups from under 15 years to over 75 years, with the greatest participation from the 36 to 45 year old age bracket.

A total of 243 responses were submitted to the City and a majority supported a relocation of the Skate Park to Stirk Park. This gave have access to amenities such as ablution blocks, drinking fountains, seating, grassed areas for non-skating family members and improved safety away from busy roads. There was concern raised by some older members of the community that the relocating the Skate park may bring antisocial behaviour. A large majority of respondents recording that the current facilities are below standard and in poor condition (66%), with 129 recording that they do not feel safe using the current skate park.

Outcome: It was recommended that Council support an amendment of the Stirk Park Master Plan to include a Skate Park, in lieu of the Pump Track, within the Youth Precinct area and the commencement of the detailed design process for Stage One.



Kalamunda Road/Chipping Road/Newburn Road Intersection Upgrade Project – March 2018

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
120	658	163	84	99	262	598	0

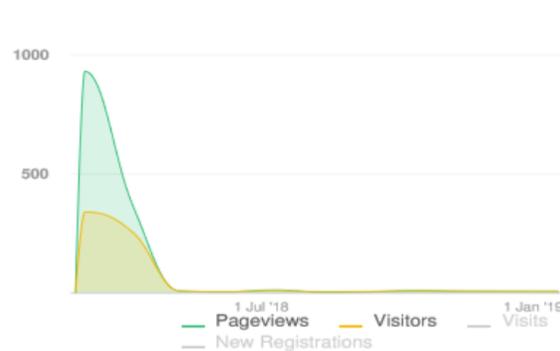
The City had been awarded a \$181,620 grant as part of the National Black Spot Program to improve the safety of the Kalamunda Road / Newburn Road / Chipping Drive intersection in High Wycombe. The funding covers works associated with improvements to the roundabout entry and exits, with a focus on improving entry deflection and hence reducing speed on approach to the roundabout. The City sought community feedback on whether they would like to see these upgrades implemented.

Consultation with community was undertaken including the City’s Web Page “Have your say”, Engage Kalamunda Website, the delivery of Information letters with hard copy feedback forms distributed to the residents and businesses within a 400-metre radius of the roundabout.

The public consultation process resulted in 120 responses, with 65% of those who responded acknowledging support for the proposed reconstruction of the roundabout to single lane entry/exit on all approaches along with proposed improvement to pre-deflection. 35% of those who responded disagreed with the

proposal. The community engagement process was considered successful in terms of responses received, with the community eager for the earliest commencement of construction. Demographic - 58.7% Female + 41.3% Male. Majority of feedback obtain from residents in High Wycombe.

Visitors Summary

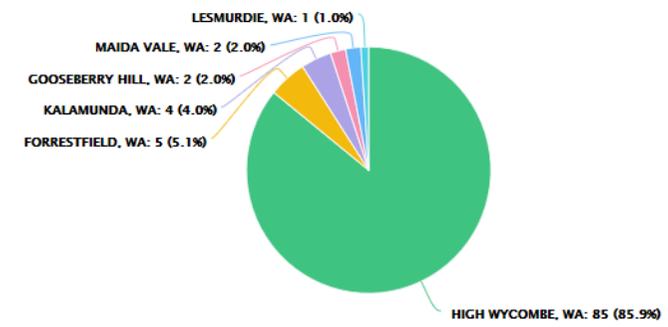


Highlights

TOTAL VISITS	658	MAX VISITORS PER DAY	163
NEW REGISTRATIONS	84	ENGAGED VISITORS	99
		INFORMED VISITORS	262
		AWARE VISITORS	598

Suburb

Choose a signup form question to see details



OUTCOME: It was recommended that the Kalamunda Road/Newburn Road/Chipping Drive intersection upgrade Concept Plan as shown on Drawing Number 4086-001001/A be endorsed to progress detailed design and construction. Works are commencing in March 2019.

Scott Reserve Master Plan:

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
135	640	91	58	59	273	546	

Scott Reserve is an important asset for the community. The City of Kalamunda has investigated how to improve the Reserve and surrounds to accommodate a variety of sporting, recreation and community uses. Through community engagement, feedback helped shape the development of the Scott Reserve Master Plan. Engagement was conducted in a variety of ways including:

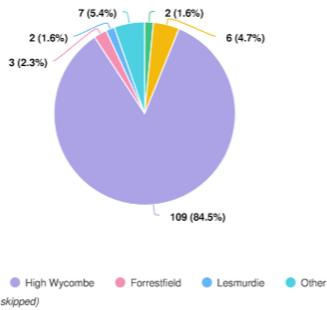
Community Drop-in Sessions were held for community to gain information, and to provide feedback on their vision for Scott Reserve on the 11 October 2018 from 4pm - 6pm at Scott Reserve Pavilion and on the 20 October 2018 from 9am - 11am at High Wycombe Community and Recreation Centre

Community Pop-ups took place at Children's Week, on the 26 October 2018 at Fleming Reserve and at Edney's Magical Kingdom Fair, on the 28 October 2018 at Edney Primary School

Community Workshop was facilitated to provide community an opportunity to give detailed input into the development of the Scott Reserve Master Plan on the 30 October 2018 at High Wycombe Community and Recreation Centre

Engagement identified that 38% of those using the Reserve as High School students, followed closely by families, with 50% using the facility once/twice a week and 84.5% of survey participants were from High Wycombe. There was large support from community for the upgrades for this facility.

Q18 In which suburb do you live?



Visitors Summary

Engage Kalamunda from 01 Jan '18 to 31 Dec '18



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	NEW REGISTRATIONS
640	91	58
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
59	273	546

Outcome: Comments closed 5:00pm Wednesday 14 November 2018. Council to endorse draft Master Plan to be advertised for public comment. Commencement of Phase 2 of Community Consultation on the draft Master Plan. Workshop dates and Master Plan public comment will open in 2019.

Kalamunda Activity Centre Plan: February – March 2018

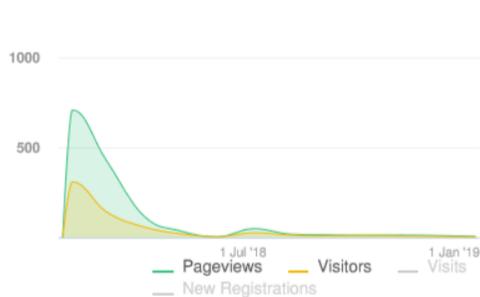
Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
44	647	77	36	46	230	520	53

The City of Kalamunda called for comment to develop an Activity Centre Plan for the Kalamunda town centre. Activity centres (commonly known as city or town centres) are suburban centres that provide a focus area for services, employment, housing, entertainment, transport and social interaction. In February and March 2018 preliminary consultation was undertaken to establish a clear vision for Kalamunda town centre. This process included a comprehensive consultation program, involving the following elements:

- Several one on one 'Coffee chat' sessions with local business owners. A total of 17 meetings took place over the 13th and 15th Feb
- A pop-up sea container workshop station including 'Jane Jacobs Walks' at two Kalamunda Markets engaging 100+community members.
- A visioning workshop at the Kalamunda Town Hall on 15 March 2018 had 17 Attendees. This was a highly engaging and interactive event.
- 44 Surveys were lodged and written submissions were invited from the community.
- Comments closed 30 March 2018

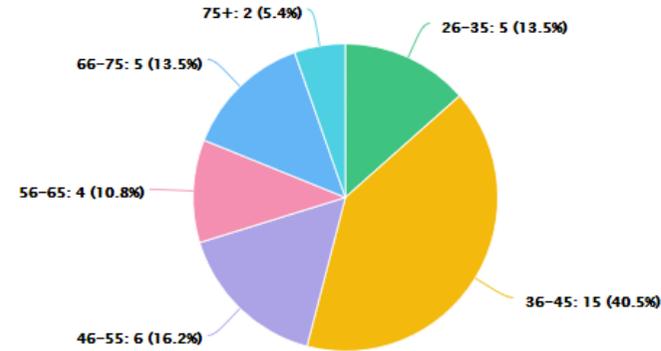
High response areas indicated that people typically use the town centre for the Markets or grocery shopping, with lower numbers for socialising and relaxing. Lack of parking, shade and greener meeting areas were commented on as an opportunity for improvement, while enhancing the public realm as a proposed improvement, without losing the character and charm of the town centre. A report was prepared by Urbis for the City of Kalamunda, highlighting engagement outcomes, key themes, community feedback and identified opportunities. Largest age bracket engaged was 36 to 45 years, followed by 46 to 55 years.

Visitors Summary



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	
647	77	
NEW REGISTRATIONS		
36		
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
46	230	520



Outcome: The preparation of an Activity Centre Plan will provide an opportunity to deliver a planning framework that can facilitate much needed activation and strategic direction to key parts of the town centre. The draft Activity Centre Plan will presented to Council for the purposes of initiating public advertising.

Cambridge Reserve – Visioning 2018

Submissions	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
23	500	40	11	12 (10 Registered)	184	423	48

Community vision for Cambridge Street Reserve, with the goal being to provide a safe, accessible and improved open space that retains the integrity of the Reserve’s natural vegetation. Consultation aimed to understand the community’s expectations and vision for Cambridge Street reserve.

Engagement: During February the City set up Information Stalls for the Reserve, handing out surveys and gathering the community’s ideas. The stalls were also set up at Forrestfield District Shopping Centre and Forrestfield library.

The Survey was open from February 2018 to March 2018. Over that time 23 surveys were completed. The survey was responded by 55% female and 45% male. Respondents were asked to add anything else they wished to comment on, the most common were regarding the importance of retaining bushland, improvement of amenities, better maintenance and the potential for the site to be used as an aged care site.

A total of 4 written submissions were received during the public advertising period and are taken into consideration as part of the concept planning for Cambridge Reserve. The key theme that was expressed by the submissions was utilising a portion of the Reserve for aged care. The site has previously been flagged as an aged care site and submissions requested this option be considered as part of the concept planning.

A Workshop was undertaken onsite at Cambridge Reserve on 28 February 2018. The workshop allowed the community to see the Reserve and provide ideas and concerns. In general, the community communicated the following as a priority for development: (Approximately 40 participants)

- ❖ Community appreciate the current natural feel of the reserve, would like to see this maintained and protected without the loss of any trees or wildlife.
- ❖ Majority of people identified the open area near the children's playground as more of an active and social community space with barbeques, native plantings, a large grassed area, seating, shade and possibility of a half-court basketball court and mini soccer pitch.
- ❖ Better maintenance of existing trails throughout the park with a preferred desire for sealed areas that have a natural feel for prams, scooters and people with disabilities.
- ❖ On-going regular maintenance of the entire reserve and laneways leading to the park.
- ❖ A fenced dog area with drinking fountain, natural play area and better maintenance of the open drain were also desired.
- ❖ There were a few residents who live opposite the reserve on Cambridge Road who prefer the park as it is due to its quietness, natural feel and abundance of wild life.
- ❖ The reception of the draft Concept Plan by survey respondents was mostly positive, 52 respondents rated the draft Concept Plan as Very Good or Good compared to 17 respondents who rated the draft Concept Plan as Poor or Very Poor.

Cambridge Reserve – Visioning 2018

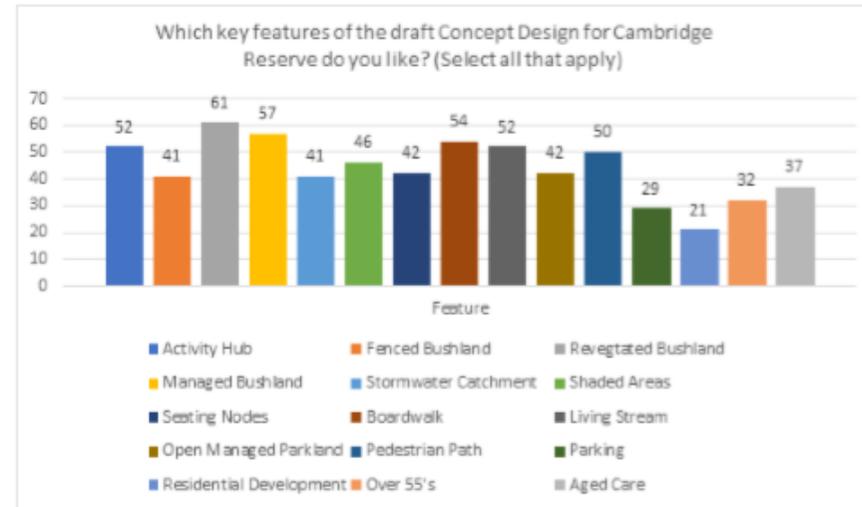
The most valued features of the draft Concept Plan from the community workshop was the managed bushland and aged care.

Most Valued Features



- Managed bushland
- Aged care
- Wetland
- Activity hub
- Pedestrian path
- Over 55's
- Fenced dog area

The key features of the draft Concept Plan survey respondents liked included the revegetated bushland, managed bushland, boardwalk and activity hub.



Outcome: Council endorses the Cambridge Reserve Community Enhancement Concept Plan, Technical Note and Summary Report, as well as noting the outcomes of community engagement in February 2019.

Council approved progressing further technical investigations for the Cambridge Reserve Community Enhancement Project in accordance with the adopted Concept Plan. Council also approved the initiation of the transfer process by referring all the required documentation to the Department of Planning, Lands and Heritage and the Minister of Lands for consideration and the preparation of a Scheme Amendment to rezone a portion of Cambridge Reserve from Local Open Space to Residential.

Local Environment Strategy: April 2018

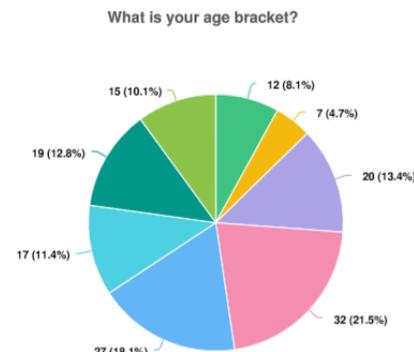
Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
163	546	33	30	31	106	392	26

The City of Kalamunda undertook visioning with the community prior to the preparation of a Local Environment Strategy. Delivery of a Local Environment Strategy is required as set out in our [Strategic Community Plan](#) under Priority 2: Kalamunda Clean & Green - delivering environmental sustainability and maintaining the integrity of the natural environment. This Strategy aimed to provide direction on delivery of best practice environmental stewardship in the City.

Community Engagement comprised of three community **Pop Ups** at the Farmers Market, Kalamunda Shopping Centre and Forrestfield Forum. There were two **Workshops** at Woodlupine and the Zig Zag Cultural Centre. The Survey was available through April and feedback was collated to assist in informing the draft Local Environmental Strategy. A total of **163 surveys** were received. The final outcomes of this consultation were documented and formed the basis for the draft Local Environmental Strategy.

Maintaining the integrity of our natural environment rated highly amongst all participants, with 123 agreeing that we can balance new development and retain the natural environment. There was an acceptance that residents need to do more to reduce their household waste, but the majority felt that used their natural resources efficiently. The City’s parks, streetscapes and landscapes rated highly important to participants, with responses across all ages.

Visitors Summary



Outcome: All results from the survey and input from the community pop-ups and workshops have been collated and prepared into a draft strategy, with the assistance of the Kalamunda Environmental Advisory Committee. Council has now received the draft Environmental Strategy and adopted for the purposes of public advertising at the February 2019 Ordinary Council Meeting. The draft Environmental Strategy is currently out for public comment for a period of 30 days, with results then presented to Council prior to final adoption of the Strategy.

Asset Levels of Service: Roads, Drainage and Footpaths: February – March 2018

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
50	434	22	30	47	205	367	74

This engagement aimed to define levels of service as required under the Asset Management Strategy 2017–2021. The strategy sought to develop a structured set of key actions to enable the City to improve its asset management practices, in line with the City’s Strategic Community Plan and Asset Management Policy.

“Levels of Service” is a phrase used in asset management to reflect the service the assets provide to the community. The aim of community consultation in 2018 to understand the expectations of asset levels of service. The community was engaged through a process of online and hard copy questionnaires, two community workshops and several pop-up information stalls in local shopping centres. A total of 50 submissions were received, identifying a range of different views from the community.

The two Community Workshops were held on the 12 February and again on the 27 February at the City Administration building at 5:00pm. Unfortunately, there was poor attendance from the community with attendance of approx. 10. Most interaction and awareness were raised through Social Media and the promotion of the Survey. Facebook, followed by the City Website provided 141 URL referrals to the Asset Levels Page at Engage Kalamunda website.

Significant responses included negative reaction to any road defects, the need to improve repairs and extent of paths, the need for improved lighting, need for further consultation on trees and verge landscaping, and a concern with drainage function and mosquitoes. The last question in the questionnaire asked people to allocate a budget across the five asset classes of roads, footpaths, parks and reserves, drainage, and buildings. The average value as a percentage of maintenance, renewal and upgrade budget from the respondents is shown below, with the City’s actual percentage for 2017/2018 in brackets:

- a) Roads 28.9% (32.4%)
- b) Footpaths 20.4% (4.0%)
- c) Drainage 14.9% (11.9%)
- d) Parks and Reserves 20.9% (38.9%)
- e) Buildings 16.0% (12.8%)

Outcome: Council endorsed the Drainage Asset Management Plan 2018 and set the objective of maintaining the funding at current levels.



Kalamunda Smart City Digital Strategy

Submission	Project Visits	News Feed	New Rego	Engaged	Informed	Aware	D/Load
2	386	34	4	2	88	339	53

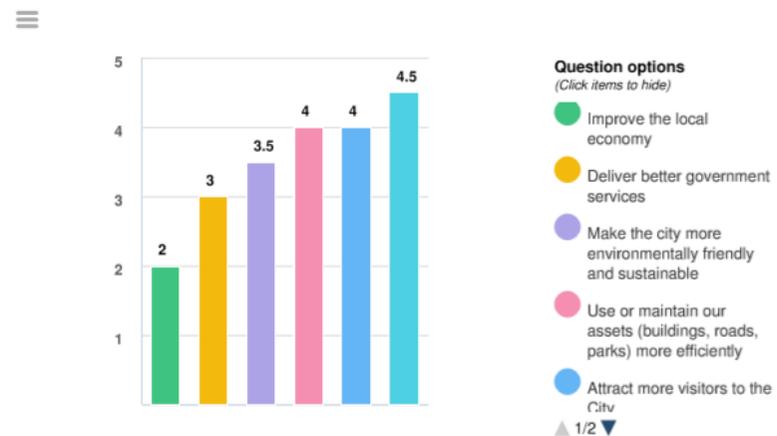
The City of Kalamunda engaged Symphony3 to assist with the development of a Smart City Digital Strategy. The City engaged with community to gain opinion on what a Smart City looks like and what benefits it could deliver to the City. It sought community feedback on what the City of Kalamunda will look like in 30 years and how technology shape how we work, play and live?

Three workshops targeting the youth, community and business sectors of the community were held. The Youth Workshop was held on Wednesday 6 December, the Community Workshop was held on Wednesday 6 December and the Business Breakfast was on Thursday 7 December. There was low engagement on this strategy, with the City with low numbers attending the workshops and the City receiving two submissions. There was reasonable interest in the online information with 386 project visits there was a lack of interest to participate in discussion.

Visitors Summary



What should be the aims of the Strategy? Please number in order of importance (with 1 being most important and 6 being least important)



Outcome: Further investigations and studies will be undertaken to determine what can be integrated from existing systems, and what needs to be improved. Costings will be built into the Digital Strategy as it develops, which will be presented to the community for their feedback.

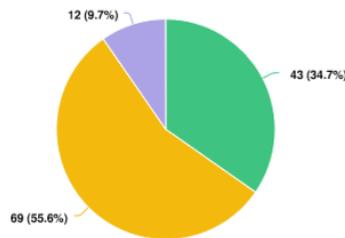
Hummerston Road Upgrades

Submission	Total Visits	Max Day Visits	New Rego	Engaged	Informed	Aware	D/Load
127	420		57	66	189	301	194

The City undertook consultation consider a 65 signatory petition from Paulls Valley residents and business owners that was presented at the Development and Asset Services Committee meeting on 12 December 2016. The petition requests that Hummerston Road East from the end of the existing sealed pavement through to Fern Road be re-gazetted and reopened (currently an unconstructed and partially cleared road reserve containing public utility services). The City has over time received numerous requests from both the residents of Paulls Valley and Piesse Brook areas for upgrading of a track(s) from the Hummerston Road end of seal through to Fern Road to provide an alternative access during emergency situations, in particular bush fires, and during times when Mundaring Weir Road is closed for various lengths of time to undertake routine maintenance works and various cycling events.

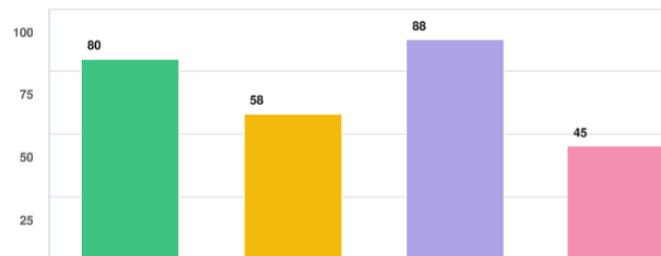
This engagement sort to gain feedback from residents and those that travel Hummerston Road. It gained strong traction and response from the local community. A formal petition to stop the re-opening of Hummerston Road was included with the submissions, along with 78 signatures as there was concerns that the road would become a thoroughfare or shortcut, would prove unsafe. Option B was the preferred alternative from respondants, asking for improvements to the infrastructure 55%.

1. Which of the two options is your preferred treatment for Hummerston Road?



Question options
 ● Option A ● Option B ● None of the above

Tick all that apply to you:



Question options
 ● I am a resident in the area ● I own a property in the area ● I travel in the area ● I work in the area
 Optional question (127 responses, 0 skipped)

Outcome: It was recommended that Council endorses the preferred option to undertake improvements to the infrastructure. This was carried.

Forrestfield/High Wycombe Industrial Area Stage 1

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
1	330	22	3	1	50	271	29

The Forrestfield/High Wycombe Industrial Area – Stage 1 Local Structure Plan (the Structure Plan) relates to 69 land parcels held in various public and private ownership and generally bounded by Roe Highway, Berkshire Road, Milner Road and Sultana Road West (the subject land). The planning for Stage 1 is now complete. The area is now being developed under the Industrial Development zone, in accordance with the adopted Structure Plan and taking into consideration the Design Guidelines for the area. *Following the announcement of the rail station, the WA Planning Commission has requested that the City consider the implications of the Forrestfield Rail Link on the surrounding areas in Forrestfield and High Wycombe.*

Public advertising of the 2017/18 Forrestfield / High Wycombe Industrial Area Stage 1 - DCP Report (DCP Report) was undertaken between 10 April 2018 and 8 May 2018. An information session regarding the DCP Report was held at the City Administration Centre on Friday 27 April 2018 at 4pm. Following the advertising period, the City reviewed the DCP based on the feedback and refined the DCP Report.

The DCP Report was presented to Council at its Special Council Meeting on Monday 3 December. The DCP report was presented for final adoption. The Council at its Special Meeting held on Monday 3 December 2018, resolved as follows: *That Council:*

1. *NOTE the submissions received during advertising of the Forrestfield / High Wycombe Industrial Area Stage 1 – Development Contribution Plan Report and responses as contained in Attachment 5.*
2. *ADOPT the Forrestfield / High Wycombe Industrial Area Development Contribution Plan Report as contained in Attachment 2.*
3. *ADOPT the Development Contribution Rate of \$17.01/m², effective immediately.*
4. *AUTHORISE the Chief Executive Officer to notify all affected landowners of the new Development Contribution Rate.*

Outcome: A review of the 2018/19 DCP Report is being commenced in early 2019.

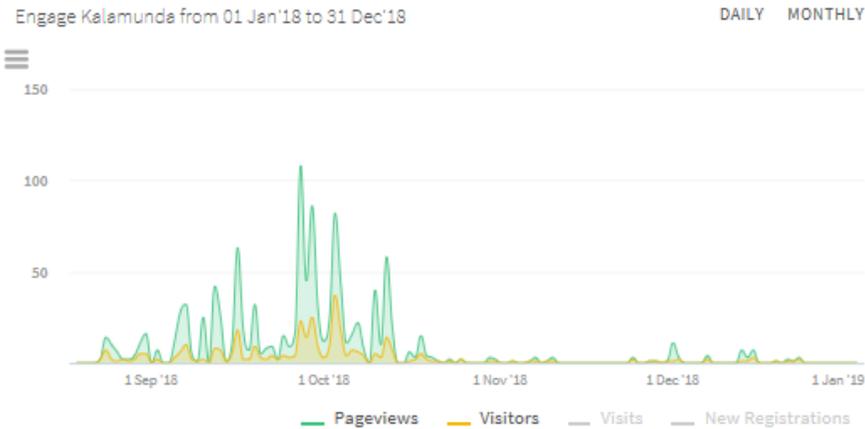


Wattle Grove South – Visioning and Values

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
111	420	37	49	85	178	267	67

Community engagement indicate that there are various views from within the community about the future planning of Wattle Grove South.

Visitors Summary



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	NEW REGISTRATIONS
420	37	49
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
85	178	267

Survey: The survey was available on the City’s online engagement portal and in hard copy at City Libraries and Administration Centre. Letters were sent to all landowners within the subject areas. Completed surveys could be returned via email, through the engagement portal, by post, or in person to any City location. A total of 93 Surveys were completed, 66 of which were completed via the engagement portal and 27 in hard copy. 78% of respondents lived in Wattle Grove, with 45 being male and 38 females.

Community Workshops:

The City undertook two community workshops. Residents in the Wattle Grove South precinct were informed of the workshops by letter. Information on the workshops was also available on the City’s engagement portal. Workshops were scheduled at a suitable location nearby to the Wattle Grove community

(Woodlupine Family and Community Centre) at different times (6pm, Monday 10 September and 10am, Wednesday 12 September), yielding approximately 90 and 45 attendees respectively. Councillors and City staff were also present.

At the workshops, the City outlined the strategic planning framework, statutory planning processes and physical attributes and regional projects impacting the planning for the area. Following the update, attendees were invited to participate in a series of activities. Overall results showed strong support for the retention of current zonings and the rural feel of Wattle Grove. Whilst the majority support minimal development or change, a change in land use options and zoning was seen as necessary for some attendees. Key elements of this include a desire to see more light-industrial or commercial land use and higher density residential living. There was support for the enhancement and protection of existing public landscapes from all parties.

The two community workshops demonstrated that Wattle Grove is special to the community primarily because of its environmental values. Members of the community strongly advocated that the consideration of the environment is extremely important when it comes to their desired look and feel of Wattle Grove in the future. It also highlighted that whilst the environment is important, so is the area's vibe and rural outlook to many land owners. The large block sizes and the lifestyle they bring instil sense of community, serenity and security. The community would like to see these unique characteristics retained into the future.

There was a large majority of attendees who vocally opposed industrialisation and wanted to see the status quo maintained, as well as several community members who wanted to see potential industrial land uses considered.

Submissions: The City received 37 submissions on Wattle Grove South during the consultation process. The majority requested the removal of Wattle Grove South from the draft Industrial Development Strategy or for any industrial development purposes. There was a small representation of support to undertake rezoning of the area to various land use types, some including forms of industrial.

Petitions: The City was aware of petitions on the subject matter of Wattle Grove South. Three petitions related to encouraging industrial land use zoning and its expansion in the area. Two related to the prevention of industrial land use zoning in the area.

Outcome: Council noted the Community Consultation outcomes. Furthermore, Council requested the Chief Executive Officer to prepare a report to Council, by May 2019, detailing the process and requirements, including cost, for establishing a Consultative Community Committee of Council to consider recommendations for the future of Wattle Grove South. Subsequently Council unanimously supported a motion to remove general or light industrial land uses in the future consultation and planning for Wattle Grove South. The following motion was put forward on the matter at the February Ordinary Council Meeting. The Council resolution is as follows:

That Council:

1. REQUEST the Chief Executive Officer to cease investigations into the establishment of a Consultative Community Committee of Council to consider recommendations for the future of Wattle Grove South.
2. REQUESTS the Chief Executive Officer to create a partial budget allocation in the 2018/2019 mid-year review, to commence the process, and the balance to be allocated in the 2019/2020 annual budget for the purpose of engaging the services of suitably qualified consultants to conduct a comprehensive community consultation program with landowners within and bordering the subject area to determine the level of community support for a variety of land use concept plans that incorporate the following design principles:
 - a) Exclude any general or light industrial land uses.
 - b) Reflect and acknowledge existing lifestyle and recreational opportunities of the area.
 - c) A high-quality residential outcome that includes a range of densities.
 - d) Include an appropriate amount of commercial development based on best practice design principles, including but not limited to public transport, technology, educational, medical and retail opportunities.
 - e) Retain existing vegetation and tree canopy cover where possible.
 - f) Consider tourism development opportunities that embrace the environmental, social and financial aspects of the City of Kalamunda.
 - g) Provide for modern sustainable housing design principles including renewable energy capture, water sensitive urban design, storage, sharing capabilities and smart city initiatives.
 - h) The subject area 'Wattle Grove South' to also include the land to the north of Welshpool Road East bounded by Tonkin Hwy, Lewis Road and Hartfield Golf Course.

The item was carried unanimously.

Community Facilities Plan

Submission	Project Visits	Daily	New Rego	Engaged	Informed	Aware	D/Load
190	337	38	39	42	159	265	20

The City of Kalamunda is updating its Community Facilities Plan, covering the period 2019 - 2032. The plan will guide the provision of the City's community facilities and their resources into the future. Engaged with community to understand what the needs and aspirations for our community facilities. The input helped shape the plan and how our resources are invested to best meet the needs of our community in the years to come.

A survey was promoted throughout the community which could be completed in hardcopy or online, gaining information on the various recreational sites around the City to see if they met the needs of the local demographic, as well as questions on quality and maintenance. In total there were 190 submissions, across all ages.

Six Community Pop Ups were held including Hartfield Park Recreation Centre, Early Years Meeting, Forrestfield Shopping forum, Kalamunda Library – Rhyme Time, Woodlupine CC Senior Lounge, and the Farmers Markets. A **Mini Workshop** and survey with School children were held at Kalamunda Senior HS (Yrs 7- 10) and Darling Range Senior HS and engagement also took place with Council committees including the Disability and Carers Committee meeting and YAK.

Four Workshops were held. On 07 November 2018 a **High Wycombe Community Workshop** was held so community could share their ideas and thoughts on Community Facilities and the needs of community. A second workshop was held on the 14th November in the **Kalamunda** at the City Administration Building Function Room, and again for **Lesmurdie** at the Ray Owen Sports Centre Activity Room on the 29 November 2018 and finally at the **Forrestfield Community Workshop**, at Woodlupine Family & Community Centre on the 18 December 2018. **Comments closed 18 December 2018**

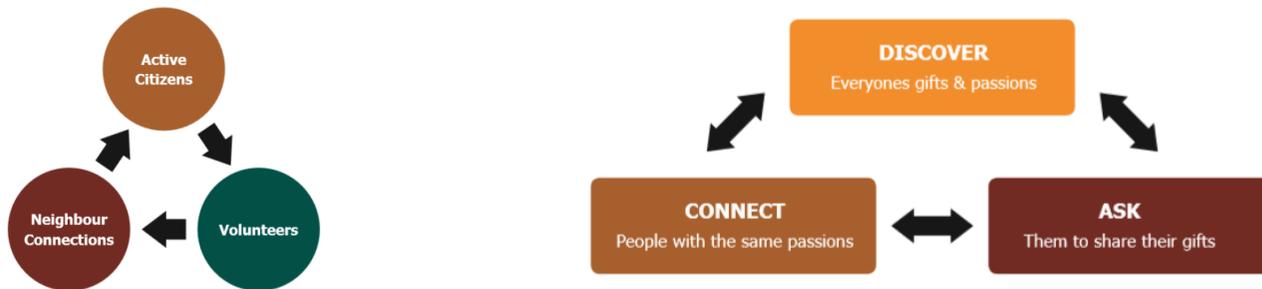
Outcome: Community feedback and comment will assist to inform the City of Kalamunda's draft Community Facilities Plan 2019 - 2032.



Kalamunda Connected Launch – Creating Active Citizens Plan

Kalamunda Connected is the overarching strategic plan for building a connected community in the City of Kalamunda. A community that works together to encourage and support each other’s endeavours is a better-connected community that is happier, healthier and safer. Building connected communities and friendly neighbourhoods, provides opportunities for people to connect with each other and their region, to make a positive difference to the community through their endeavours. Connecting people to each other, to places, spaces and opportunity is vital to this process

Fundamental to this concept is promoting the value of active citizenship to the community, and, enabling people to connect to opportunities and to volunteering. Included under this over-arching plan is Health and Wellbeing, Local Hero, Good Neighbours, Thank a Volunteer Day, and more recently in 2019, the Adopt a Patch and Town Team Movement. Engagement is ongoing across these Kalamunda Connected programs.



Outcome: Adopted by Council. Local Hero, Health and Wellbeing and Good Neighbours strategy have commenced.

Kalamunda Connected Good Neighbours

Submission	Project Visits	Daily Max Visits	New Rego	Engaged	Informed	Aware	D/Load
5	178	16	2	5	53	158	

Local stories of everyday people, doing good in their hood! Good neighbours connects with community by celebrating the kind will and good deeds of your fellow community members. Through promotion and ongoing engagement, the City is encouraging community to send their story of a good neighbour (Resident of the City of Kalamunda) in 100 words or less. In 2018 this engagement had much interest, but only a small number of submissions promoting their neighbours. With three worthy winners were announced in 2018, and we plan with further promotion many good neighbours will be found and celebrated. **Outcome:** Ongoing

Performance for Your Post

1,499 People Reached

11 Likes, Comments & Shares

8 Likes	6 On Post	2 On Shares
0 Comments	0 On Post	0 On Shares
3 Shares	3 On Post	0 On Shares

46 Post Clicks

5 Photo Views	16 Link Clicks	25 Other Clicks
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NEGATIVE FEEDBACK

0 Hide Post	0 Hide All Posts
0 Report as Spam	0 Unlike Page

Reported stats may be delayed from what appears on posts

Get More Likes, Comments and Shares
Boost this post for \$42 to reach up to 8,800 people.

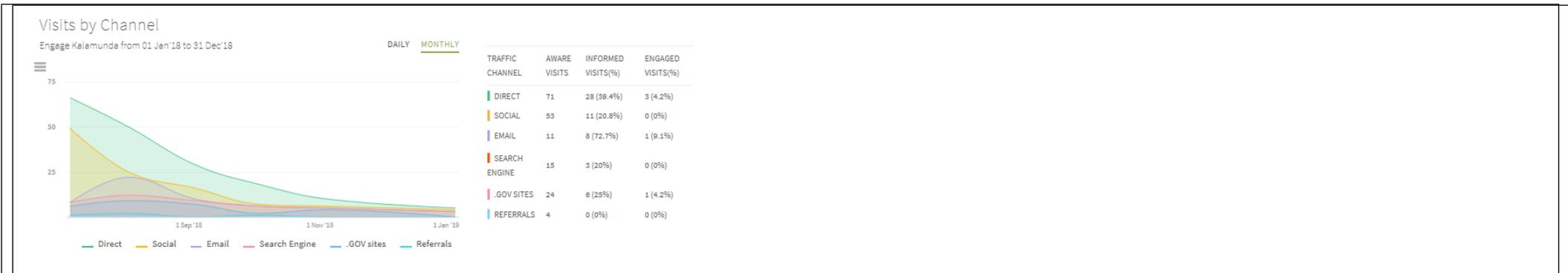
1,499 People Reached | 57 Engagements | Boost Post

Visitors Summary



Highlights

TOTAL VISITS	178	MAX VISITORS PER DAY	16
NEW REGISTRATIONS	2	ENGAGED VISITORS	5
		INFORMED VISITORS	53
		AWARE VISITORS	158



Kalamunda Connected – Local Hero

Submission	Project Visits	Visits Daily	New Rego	Engaged	Informed	Aware	D/Load
19	306	19	14	15	120	244	30

In July 2018, the City introduced a new program called Local Heroes. The City of Kalamunda, in partnership with the Forrestfield and High Wycombe Community Bank Branches of the Bendigo Bank have been announcing monthly winners in our three categories this financial year. The Local Hero Awards are a celebration of those people within our community who give so much to help others, who are passionate about making a difference, freely volunteering to help and protect our community. This is a positive way of recognising individual members, while encouraging community volunteering and service.

In December, three City of Kalamunda locals who have made extraordinary contributions to the community were last week recognised at the City’s annual Thank a Volunteer Day. Celia Cheffins, Damien Lee and Tobias Bailye were presented with \$500 by Mayor John Giardina, each taking home the title of Local Hero of the Year for their age group.

There is ongoing promotion of the Local Hero Award across our Social Media platforms, publications and at our library’s and recreational centres.

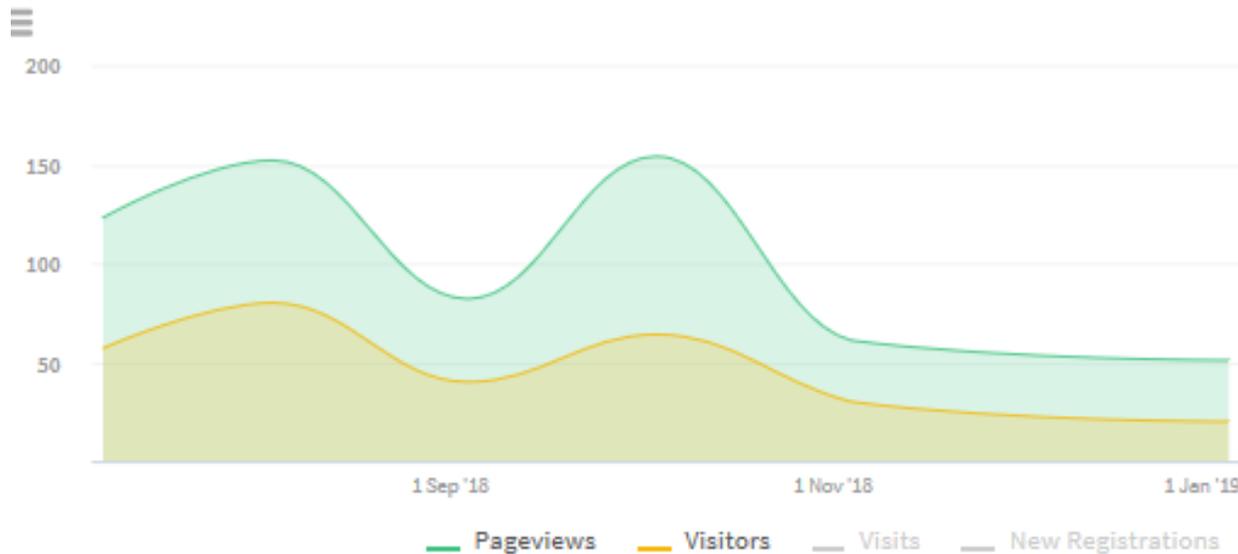
This forms a component of the overarching Kalamunda Connected Strategy to build stronger, happier and connected communities.

Outcome: Due to its success, the City of Kalamunda’s Local Heroes program is set to continue in 2019.

Visitors Summary

Engage Kalamunda from 01 Jan'18 to 31 Dec'18

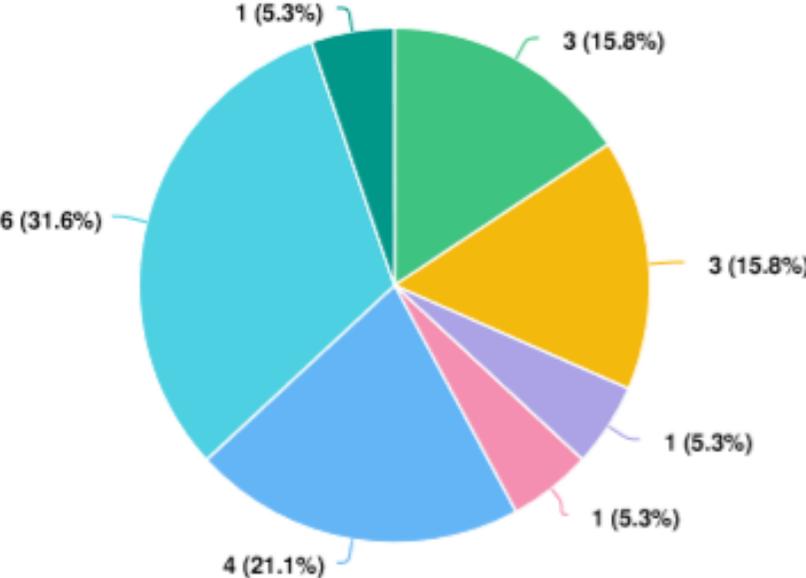
DAILY MONTHLY



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	NEW REGISTRATIONS
306	19	14
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
15	120	244

If known, what area do they contribute to as a local hero?



Question options

- General Community good deeds
- Community Service
- Community Health
- Youth
- Environmental
- Disability Support
- Other

Tourism Strategy (Phase 1) 2018

Submission	Project Visits	Daily Visits	New Rego	Engaged	Informed	Aware	D/Load
	335	18	26	30	95	241	57

A variety of workshops were facilitated across the City to create a Tourism Strategy to support various interests and industry in our community. Heritage, Arts and Culture, closely followed by Events, Tourism Support Services, Agricultural Tourism and Nature Based Tourism were the best attended and had passionate community members offer their perspective and take part in interactive brainstorming and visioning sessions. These workshops worked on maximising the opportunities, generating ideas, identifying unique branding opportunities, cross promotion, events and much more. Highly successful and positive engagements that generated much interest, energy and creative thinking to support our tourism industry moving forward. This is phase one of the Tourism Strategy with Phase two to scheduled to commence in 2019.

Outcome: Council adopted the draft Strategy for the purposes of public advertising. The results of the public comment period will be taken into consideration, with amendments made to the draft as required, it will then be presented to Council for final adoption of the Tourism Development Strategy.

Visitors Summary

Engage Kalamunda from 01 Jan '18 to 31 Dec '18

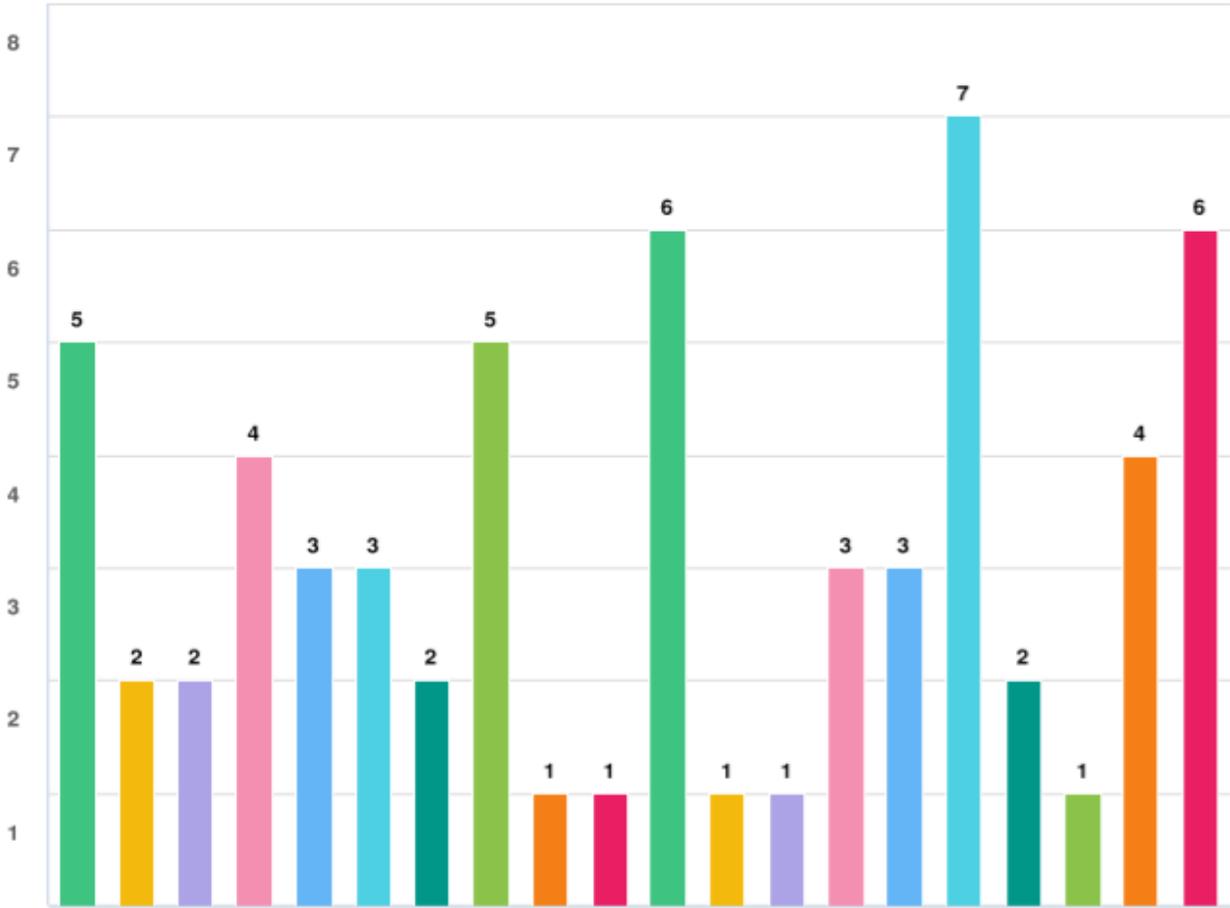
DAILY MONTHLY



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	NEW REGISTRATIONS
335	18	26
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
30	95	241

Which workshop are you registering your attendance for? (select all that apply).



Question options

- Agri Tourism ● Cycle Tourism ● Heritage Tourism ● Arts & Culture Tourism ● Children & Family Tourism
- Indigenous Tourism ● Adventure Active Tourism ● Nature Based Tourism ● Physical Attractions
- Accommodation ● Events ● Sports Tourism ● Retail
- Food & Beverages, Retail, Agri-Tourism & Accommodation ● Special Events ● Heritage, Arts & Culture
- Active Adventures, Sport & Cycling ● Indigenous
- Active Adventures, Sport & Cycling | Nature Based & Physical Attractions
- Tourism Support Services, Infrastructure & Marketing & Planning

Community Safety and Crime Prevention Advisory Committee

Submission	Project Visits	Daily Visits	New Rego	Engaged	Informed	Aware	D/Load
8	296	81	7	8	79	238	57

The City sort nominations to fill 4 community representative positions. The Advisory Committee is to be made up of 7 members from the following stakeholders:

- One member of WA Police Service (Forrestfield)
- Four community representatives, one from each ward where possible. (Nominations Open)
- A minimum of two and a maximum of four Councillors, one from each ward where possible.

Those interested in participating on this Advisory committee, completed a nomination form. They were required to provide a one-page attachment summarising their interests, experience, benefits that they would provide to the reference group and their ability to allocate the necessary time. Nominations were downloaded and submitted to the City of Kalamunda via enquiries@kalamunda.wa.gov.au, or they could be delivered in person to 2 Railway Road, Kalamunda or post to City of Kalamunda, PO Box 42, Kalamunda WA 6926, Alternatively they could go to Engage Kalamunda and follow the link. Nominations closed 8 September 2018. All submissions were reviewed and a final report was presented to Council to recommend Committee Members.

Outcome: Community Safety and Crime Prevention Advisory Committee members were endorsed by Council.



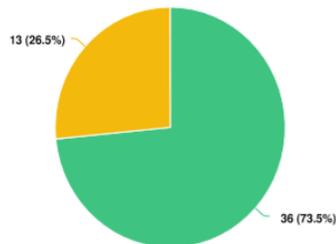
Pest Control: Fox Control

Submission	Project Visits	Max Daily Visits	New Rego	Engaged	Informed	Aware	D/Load
49	250	90	28	49	158	236	

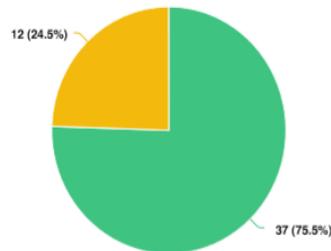
The City of Kalamunda’s fox control program was put on hold in June, whilst an investigation into a report that a dog was caught in a trap in Mundy Regional Park took place. This dog was being walked off lead by its owner, in a signed fox trapping region in the City of Kalamunda. Following recommendations from the Kalamunda Environmental Advisory Committee and endorsement by Council, Fox trapping commenced for a period of 7 – 14 days from the 23 July 2018. Due to the incident, there was a high level of interest generated from community. The City undertook engagement to educate the community and to determine the communities appetite for such control programs.

Outcome: Community Engagement found that even after the incident, the wider community understood the requirement of this program (89.8%), although their remained members of the community who are distressed at the practice. This closed 1st September 2018

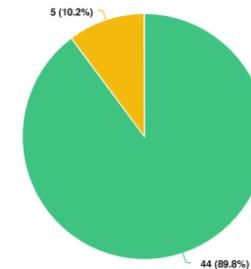
1. Are you aware of fox activity in your neighbourhood? Residents are encouraged to report sightings to the City.



2. Are you aware of the City’s responsibility to control fox populations?



3. Do you support controlling fox populations in the City of Kalamunda?



Pest Control - Rabbits

Submission	Project Visits	Daily Visits	New Rego	Engaged	Informed	Aware	D/Load
8	296	81	7	8	79	238	57

City of Kalamunda
Published by Nicole O'Neill [?] · November 21, 2018 · Like Page

The City of Kalamunda is complementing the national program in the fight against Australia's most costly and destructive vertebrate pest – the European Rabbit - with the release of the current Rabbit Calicivirus (RCV) strain RHDV1 K5 in mid-December 2018. Rabbits are a major threat to native flora and fauna and cause \$200 million in agricultural loss each year. RCD is a biological control agent and is spread from wild rabbits through mosquitos and other vectors such as fleas ... [See More](#)



Get More Likes, Comments and Shares
Boost this post for \$42 to reach up to 8,800 people.

10,368 People Reached | **3,746** Engagements Boost Post

Sonya J Olsen, Katie Walsh and 99 others | 118 Comments 55 Shares

Performance for Your Post

10,368 People Reached

784 Reactions, Comments & Shares

69 Like	25 On Post	44 On Shares
5 Love	2 On Post	3 On Shares
5 Wow	0 On Post	5 On Shares
57 Sad	20 On Post	37 On Shares
108 Angry	55 On Post	53 On Shares
489 Comments	269 On Post	220 On Shares
55 Shares	55 On Post	0 On Shares

2,962 Post Clicks

122 Photo Views	39 Link Clicks	2,801 Other Clicks
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NEGATIVE FEEDBACK

15 Hide Post | **0** Hide All Posts

0 Report as Spam | **0** Unlike Page

Reported stats may be delayed from what appears on posts

Libraries Trail: Modified Winter Hours

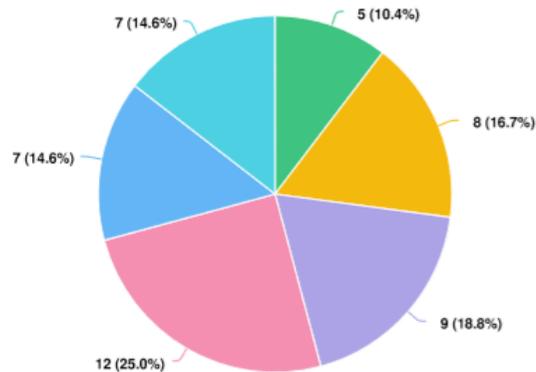
Submission	Project Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
52	209	25	10	22	65	185	4

Following an audit of the City of Kalamunda's libraries, it was found that there was a low demand for evening-time services, with an expectation that demand would decrease further during the winter months. To ensure our facilities were operating efficiently, the City trialled modified opening hours at Forrestfield, High Wycombe and Kalamunda Libraries from 2 July to 31 August 2018 (inclusive). Lesmurdie Library hours remain with standard hours. Engagement was online and the trial was widely advertised across all sites, online on Facebook, Kalamunda Engage, City Website, as well as E News, print media, posters and flyers.

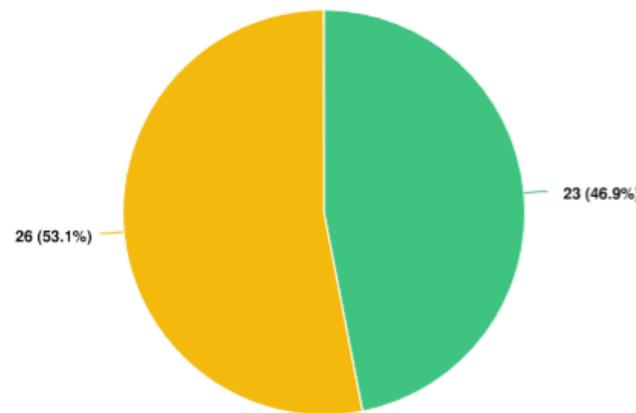
The trial meant that these libraries closed at 6pm on nights, they would normally close at 8pm. If the trial was successful and supported by the community, the modified hours would be implemented during winter every year (from June through August). The City engaged with community to gain their perspective on the proposal to implement modified hours each winter. Comments closed 5pm 14 September 2018.

Submissions were received from a good cross section of ages, with the 56 to 65 age bracket at 25%, as the largest contributor followed by the 46 to 55 age bracket. When asked "Do you support changing 8pm closing times to 6pm during winter each year?" the division was 53% No and 46.9% Yes.

Outcome: The City of Kalamunda is proposing to undertake the modified hours in 2019.



Question options
 ● 26 - 35 ● 36 - 45 ● 46 - 55 ● 56 - 65 ● 66 - 75 ● 75 +



Question options
 ● Yes ● No

2018 Christmas Lights in the City

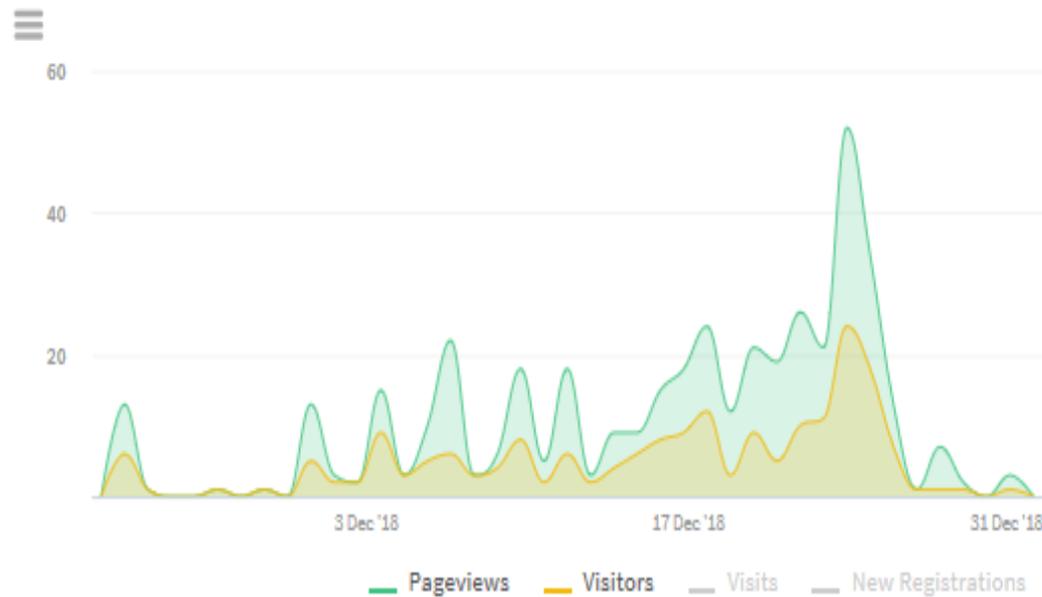
Submission	Project Visits	Daily Visits	New Rego	Engaged	Informed	Aware	D/Load
NA	208	24	1	2	95	184	NA

To encourage businesses and individual homeowners in the City of Kalamunda to join in and celebrate the seasons festivities, enhancing the experience of visiting the City during the Christmas season, supported by the Clip Joint and the Chamber of Commerce.

Visitors Summary

Engage Kalamunda from 01 Jan'18 to 31 Dec'18

DAILY MONTHLY



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	NEW REGISTRATIONS
208	24	1
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
2	95	184

City of Kalamunda shared a post.
Published by Nicole O'Neill [?] · December 22, 2018 · 🌐



Kalamunda Christmas Lights Competition
December 22, 2018 · 🌐

Congratulations to **Earth Fairy** for winning 1st place in the 2018 **Kalamunda Christmas Lights Competition**. Their prize is \$500 cash, donated by the **City of Kalamunda**.

2,577 People Reached
City of Kalamunda

523 Engagements

Boost Unavailable

Performance for Your Post

2,577 People Reached

62 Reactions, Comments & Shares ⓘ

55 Like	55 On Post	0 On Shares
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5 Love	5 On Post	0 On Shares
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1 Comments	1 On Post	0 On Shares
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1 Shares	1 On Post	0 On Shares
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462 Post Clicks

184 Photo Views	0 Link Clicks	278 Other Clicks ⓘ
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NEGATIVE FEEDBACK

0 Hide Post	0 Hide All Posts
0 Report as Spam	0 Unlike Page

Reported stats may be delayed from what appears on posts

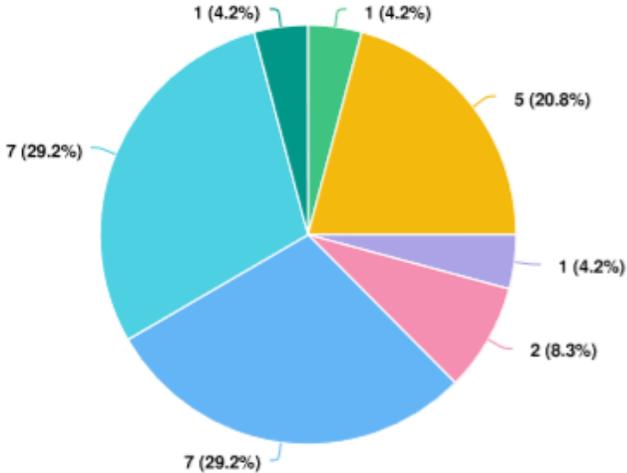
Health and Wellbeing

Submission	Project Visits	Max daily visits	New Rego	Engaged	Informed	Aware	D/Load
24	193	29	11	24	116	163	45

The City of Kalamunda published the Draft Health and Wellbeing Plan and opened this for community consultation. Feedback from community members suggested a focus on youth and seniors. Stress and substance abuse were two key issues raised by the community having an impact on health and well-being, along with social isolation, with further consideration being given to mental health initiatives. The feedback was used to ensure the Plan addresses community needs. Consultation was initiated through a community Survey, an industry workshop (low attendance), and was widely advertised across all sites, online including Facebook, Kalamunda Engage, City Website, as well as E News, print media, and flyers.

Survey Responses from the wider community indicated that 20% rated their daily life as OK, 50% Happy, 16.75% as very Happy. Of those surveys, one quarter classified themselves as Stressed, and 16% as highly stressed. Community building and connection was highlighted as an area that could be improved in our region with 25% stating they rarely or never spoke with neighbours, however respondents considered themselves living in a safe community.

5. How often do you chat with your neighbours?

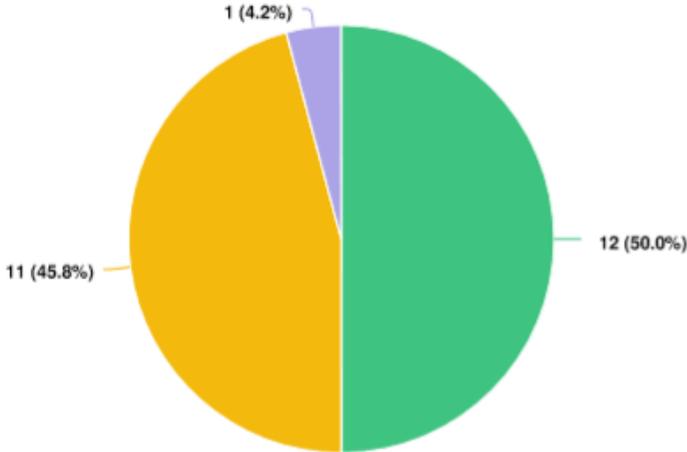


Question options

- Never
- Rarely
- Six monthly (or so)
- Three monthly (or so)
- Monthly
- Weekly
- Daily

Optional question (24 responses, 0 skipped)

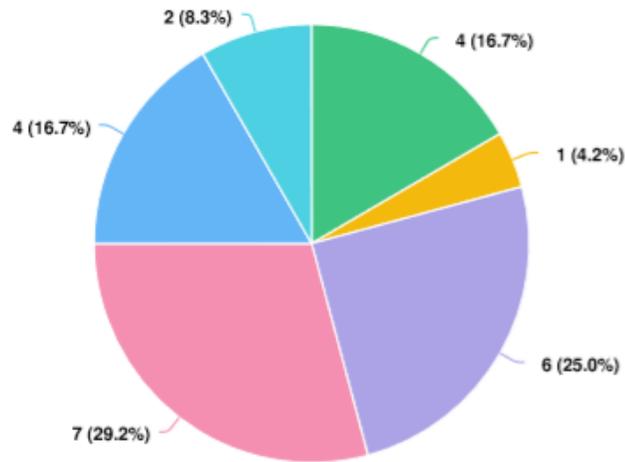
Do you feel safe in your community?



Question options

- Yes I do
- Often
- Soemtimes

Overall in the last two weeks, how stressed have you felt?



Question options

- 0 Highly Stressed
- 1-2 Very Stressed
- 3-4 Stressed
- 5-6 OK
- 7-8 Happy
- 9-10 Relaxed and Happy

The draft Plan was reviewed with this feedback and the Plan has been developed based upon information obtained from non-for-profit organisations, government agencies and other local governments, as well as the Community consultation with community members, health practitioners and community groups. The Health and Wellbeing Plan acknowledges activities already undertaken by the City to promote health and well-being and identifies future projects and actions to be conducted to further enhance the health and wellbeing of the community. **Outcome:** Council endorsed the [Community Health and Wellbeing Plan 2018 – 2022](#) unanimously, with work now underway bringing the plan to fruition. The Plan recognises the actions the City currently takes to improve the health outcomes of its residents and identifies opportunities to further improve community’s health and wellbeing.

Proposal to Rename Willoughby Park: May 2018

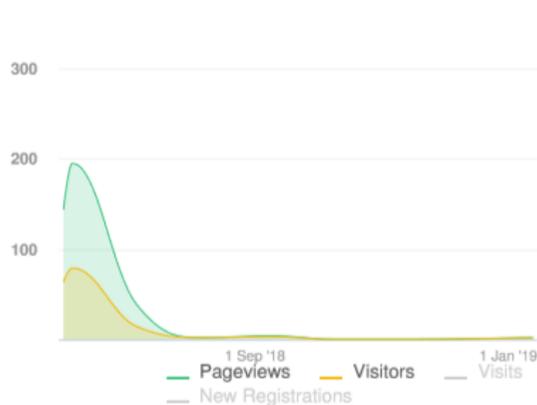
Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
26	172	30	15	23	77	153	17

The City of Kalamunda sought community feedback on a proposal to rename Willoughby Park (Sanderson Road, Lesmurdie) to Barrie Oldfield Park. Mr Oldfield was an Honorary Freeman of the Municipality, founding member and past president of Men of the Trees, past president of the Lesmurdie Progress Association, centenary medallist, environmentalist, councillor, community builder, film maker and author. Mr Oldfield is recognised for his active membership in the community, and for his work in the ongoing preservation and rehabilitation of our natural environment.

Engagement was promoted online, through Facebook, Engage, City Website, through Newspaper articles and more. This consultation resulted in the majority of respondents supporting the proposed name change.

Outcome: That Council: REQUEST the Chief Executive Officer to initiate the process to change a portion of Reserve 29673 at 39 Sanderson Road, Lesmurdie, currently named "Willoughby Park", to Barrie Oldfield Park in accordance with Landgate's Polices and Standards for Geographical Naming in Western Australia.

Visitors Summary

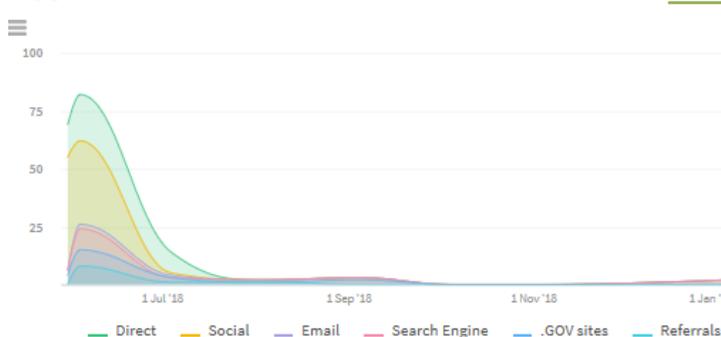


Highlights

TOTAL VISITS	172	MAX VISITORS PER DAY	30
NEW REGISTRATIONS	15	ENGAGED VISITORS	23
		INFORMED VISITORS	77
		AWARE VISITORS	153

Visits by Channel

Engage Kalamunda from 01 Jan'18 to 31 Dec'18



TRAFFIC CHANNEL	AWARE VISITS	INFORMED VISITS(%)	ENGAGED VISITS(%)
DIRECT	43	28 (65.1%)	14 (32.6%)
SOCIAL	88	36 (41.9%)	6 (7%)
EMAIL	3	1 (33.3%)	0 (0%)
SEARCH ENGINE	15	6 (40%)	2 (13.3%)
.GOV SITES	15	10 (66.7%)	3 (20%)
REFERRALS	10	6 (60%)	1 (10%)

Environmental Land Use Planning Strategy (ELUPS)

Submission	Project Visits	Max day Site Visits	New Rego	Engaged	Informed	Aware	D/Load
0	162	22	1	0	52	139	51

Environmental Land Use Planning Strategy (ELUPS) is to meet the future needs of the local natural environment and community and promote sustainable planning practices which will be complementary to the existing natural environment. The ELUPS will form one part of the proposed new Local Planning Strategy being developed in 2019, focusing on relevant environmental planning considerations. Engagement with community provides feedback that will help shape the development of ELUPS, as well as ensure that community voice is heard. Feedback could be provided via our [online feedback form](#), or written submissions can be submitted to the City by post, hand, or email.

Outcome: The ELUPS was adopted on the 25 September 2018 for the purpose of public advertising. The Draft was released for public comment in November 2018 – Gaining Community Feedback currently in 2019.

Visitors Summary



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	
162	22	
NEW REGISTRATIONS		
1		
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
0	52	139

City of Kalamunda
Published by Katrina Bergin [?] · November 28, 2018 · Like Page

The City of Kalamunda's draft Environmental Land Use Planning Strategy (ELUPS) is now open for comment!

The Strategy aims to identify the environmental factors that will influence planning in the City and provide guidance on how we can improve environmental outcomes through our statutory and strategic planning processes.

Have your say online today. For more information, visit <https://engage.kalamunda.wa.gov.au/environmental-land-use-p.....>
[See More](#)

Environmental Land Use Planning Strategy
Comments close 28 February 2019

engage.kalamunda.wa.gov.au

1,378 People Reached **28** Engagements [Boost Again](#)

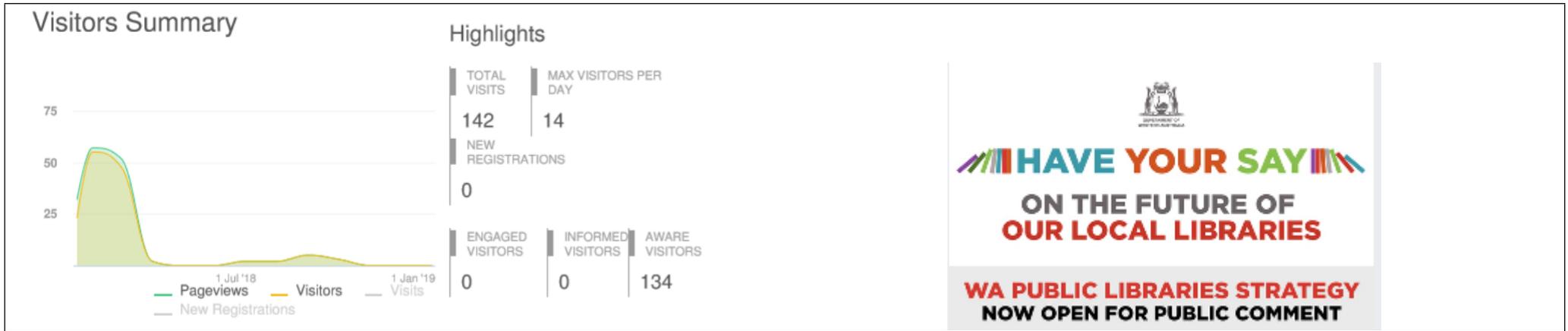
WA Public Library Strategy – January 2018

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
NA	142	14	0	0	0	134	0

Information based engagement only. Engage Kalamunda and City of Kalamunda.

The WA Government is aiming to modernise our State's public library system to better meet the diverse and evolving needs of the community and is seeking the community's input. The **WA Public Library Strategy** outlines five priority actions over the next four years. The strategy was developed following extensive research and consultation with key partners including the State Library of WA, Public Libraries WA, WA Local Government Association and local government authorities. The Background Paper and the Strategy, together with the Survey were used to collect feedback from community for the WA Public Library. "Electronic copies of the background paper and strategy, together with a survey to collect feedback, are available at: [Have Your Say - WA Public Libraries Strategy](#)"

Outcome: The WA Public Library Strategy community consultation included workshops, meetings and forums as well as an on-line survey attracted more than 1,300 responses, over 70 per cent of which came from community members. The Strategy's priorities received endorsement in all forums including the survey where the five priorities were well supported across all respondent categories. The report on the consultation was endorsed by the Library Board of Western Australia and the Western Australian Local Government Association (WALGA) in July 2018. It is clear from the consultation that there is a need for public library assets and services to be more closely aligned with the priorities of their local communities, while at the same time providing a consistent universal offering. This has implications for the Strategy's implementation as there will need to be flexibility to cater for Western Australia's diversity.



Paperless Information Centre

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
20	204	8	0	22	60	133	54

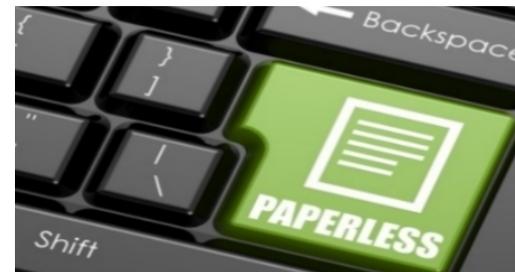
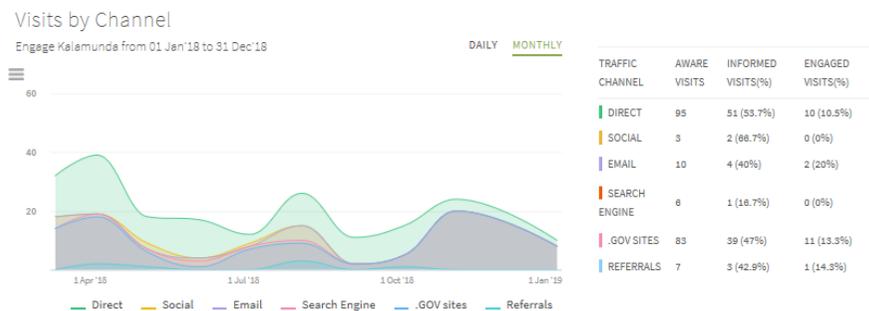
At the City of Kalamunda, as part of our corporate objectives being environmentally sustainable is crucial.

As part of our continuous improvement, the City considered ways of reducing waste and improving our services. One major area was recently highlighted - the City paper consumption in our brochure and flyer distributions. This was identified as an ideal opportunity to revise our process and printing options for this core service.

The Paperless Information Centre provides an alternative option on how best to deliver the most recent and current information in the most timely manner, without continually re-printing and distributing. With this digital option being considered, the City would still continue delivery of information but would only print on-demand and provide alternate format options upon request, thus ensuring we reduce our paper consumption, costs and carbon footprint for this crucial service.

Engagement on this initiative was information based, with participants invited to have their say via participating in Quick Poll, completing an online survey and requesting a link be sent so they can access the paperless information service from home.

Outcome: The Paperless information Centre is currently being trialed at the Administration Building, with information available at our online document library for community members to view, download or email.



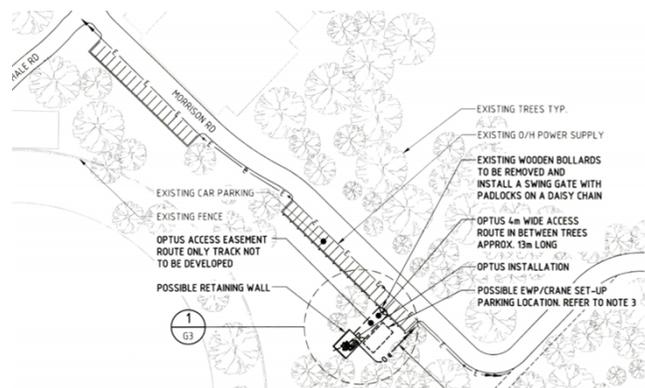
Mobile Phone Tower Lot 3000 (199) Hale Road, Forreestfield (DA18/0097)

PROJECT	NEWSFEED	VISITS	VISITORS	COMMENTS	VOTES	COMMENTS BY ADMIN
Development Applications	<ul style="list-style-type: none"> Proposed Telecommunications Tower and Infrastructure – Lot 3000 (199) Hale Road, Forreestfield (DA18/0097) 		33	32	0	0

The City of Kalamunda received an application for a proposed telecommunications tower and associated infrastructure at Lot 3000 (199) Hale Road, Forreestfield. The tower was proposed to be 36.5m in total height and be of monopole design. The intention of the tower is to improve mobile coverage within the locality. Engagement published Plans and documents setting out and explaining the development application, which could also be viewed at the City of Kalamunda. This was published on the City Website and on Engage.

A community session was held 4th April 2018 at Hartfield Park Recreation Centre to assist the public in interpreting the plans for the proposal. Comments closed 5pm 16th April 2018.

Outcome: Council at its Special Council Meeting of April 30, 2018, considered the above and resolved to recommend approval of the proposal to the Western Australian Planning Commission. The application was forwarded to the Commission for their consideration.



Rates: Objects & Reasons: May 2018

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
8	127	30	6	8	24	113	0

In accordance with Sections 6.33 & 6.36 of the Local Government Act 1995 and the Council's intention to continue levying differential rates for the 2018/2019 Financial Year, the City is required to publish its Objects and Reasons for implementing the differential rates categories.

The overall objective of the Rates and Charges in the 2018/2019 budget is to provide for the shortfall in income required to enable the City of Kalamunda to provide the necessary works and services in the 2018/2019 Financial Year after considering all non-rate sources of income.

Local Planning Policy P-DEV 55 - Place of Worship Policy: February 2018

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
1	106	28	2	1	14	102	8

The City of Kalamunda called for public comment on Local Planning Policy P-DEV 55 – Place of Worship Policy. In response to an increasing trend and demand for lands for places of worship, including multi-use facilities, the City of Kalamunda seeks to establish policy guidance with respect to the location and application for additional or special land uses for the purposes of development of places of worship.

Engagement: The City published the Policy in the local newspapers, which included an advertisement notice being placed in the local paper for two consecutive weeks and a notification being placed on the City's social media platform, City Website and Engage Kalamunda.

Submission: During the advertising period one submission was received, which outlined how Places of Worship have changed and developed over the years to offer a number of different services in addition to what could be deemed as 'regular religious services' and that the worship use may be considered as the incidental use.

Outcome: Council at its Ordinary Council Meeting held on 24 April 2018, considered and the above proposal and resolved to **ADOPT** the Policy, subject to the following modifications ([RESOLVED OCM 58/2018](#)). Planning Policy now available on the City of Kalamunda Website.

- Removal of Aged and Dependent person's dwellings, Aged Residential Care and Small Café / Canteen (Restaurant) from the list of 'Acceptable Subordinate Incidental Uses' from Clause 7A.

Visitors Summary



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	
106	28	
NEW REGISTRATIONS		
2		
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
1	14	102

All Abilities – Online Community

Submission	Project Visits	Max daily visits	New Rego	Engaged	Informed	Aware	D/Load
5	133	9	4	7	40	100	0

This is online area allows a platform for carers and persons with disability to share their tips, knowledge and insight into all things accessible in the local area. This area allows people to share their stories, mark some awesome local spots via the map and also ask questions. Allowing people to get involved and share your knowledge.

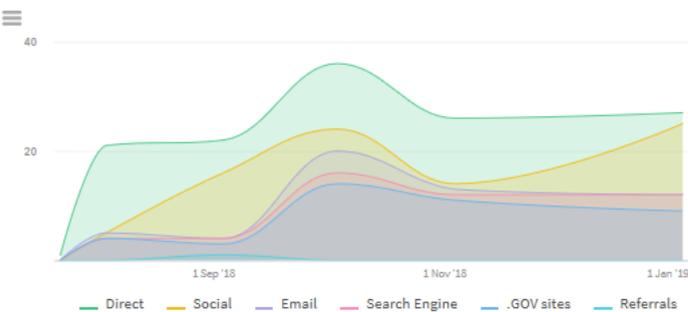
The City of Kalamunda is working with local businesses to raise awareness of providing an accessible, inclusive environment for all customers and visitors. The Accessible Business toolkit has been designed to assist businesses to raise awareness amongst staff and outline easy ways to improve access.

Engagement is in the form of Discussion Board, question and answer, sharing stories and places, as well as sharing helpful links.

Visits by Channel

Engage Kalamunda from 01 Jan '18 to 31 Dec '18

DAILY MONTHLY



TRAFFIC CHANNEL	AWARE VISITS	INFORMED VISITS(%)	ENGAGED VISITS(%)
DIRECT	49	26 (53.1%)	9 (18.4%)
SOCIAL	30	7 (23.3%)	0 (0%)
EMAIL	6	2 (33.3%)	0 (0%)
SEARCH ENGINE	7	2 (28.6%)	0 (0%)
.GOV SITES	40	21 (52.5%)	4 (10%)
REFERRALS	1	0 (0%)	0 (0%)

General Discussion Board

25 October 18

Chris Saligari

AGREES	DISAGREES	REPLIES
1	0	0

West Rise Basketball is a basketball competition for people with intellectual disabilities. We have 11 teams in our competition with 4 in mainstream basketball. Players learn to coach and umpire and play basketball. We have local players who have represented WA at the WA Ivor Burge Nationals, held every February in a different state. Recently one of our females, Amy Thomas, from High Wycombe, was asked to attend the Australian Pearls Camp. And 3 of our male players have attended Boo merangs camps.

01 November 18

Fiona.stuart

AGREES	DISAGREES	REPLIES
1	0	0

Have you ever considered or shared this with our community. Leadership WA offer the LeadAbility leadership Course designed to develop people with disability and those in the sector, who have the potential to lead and generate change. The LeadAbility Course is generously supported by the Department of Communities (Disability Services). The Course builds leadership skills to enable people to become more influential, confident and effective leaders. The Course includes dynamic activities focusing on understanding leadership, effective communication, teamwork, and community. We strongly encourage people with disability, family members, carers, and employees in the sector, to consider applying for this Course. Go to the Leadership WA website to find out more!

05 November 18

Leah.Matthes

AGREES	DISAGREES	REPLIES
0	0	0

READY STEADY GOLF - INCLUSIVE GOLF SESSIONS In celebration of International Day of People with Disabilities, Ready Steady Golf will be hosting a number of free 'Come & Try Golf' sessions at The Vines Resort & Country Club on the following days and times: Monday 3 December 2018 9.30am to 10.30am Thursday 6 December 2018 9.30am to 10.30am Friday 7 December 2018 9.30am to 10.30am All abilities are welcome. Bookings are essential. Please contact Mark Tibbles: M: 0413 824 477 E: mti.golfacademy@gmail.com

Lesmurdie School and Community Library

Submission	Project Visits	News Feed	New Rego	Engaged	Informed	Aware	D/load
294	103	294	59	2	21	94	3

The City of Kalamunda sought public comment on the future use of the Lesmurdie School and Community Library.

- 2 x Community Workshop - 54 Attendees across both workshops (Kala:24/10/18 & Lesmurdie:22/11/18)
- Community Survey – Online and Hardcopy
- Promotion to raise awareness on Social Media & City Website
- Engagement promotion at community events
- Information from Cultural, Rec & Library Centres
- 294 Submissions received from community

The overarching theme from respondents was they were appreciative of the library’s location, resources and the customer service received from staff at the library. The intergenerational partnership of students working in a shared space was providing a unique opportunity for students to mix with all age groups. **294 submissions received. 291 respondents were opposed** to the closure of the community component of the library. (Ordinary Council Meeting - 27 March 2018)

Council Resolved: That Council:

1. Receive the public feedback provided by users of the Lesmurdie School Community Library.
2. Support the retention of the Lesmurdie School Community Library under the License Agreement with the Department of Education.

Visitors Summary



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	
103	6	
NEW REGISTRATIONS		
59		
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
2	21	94

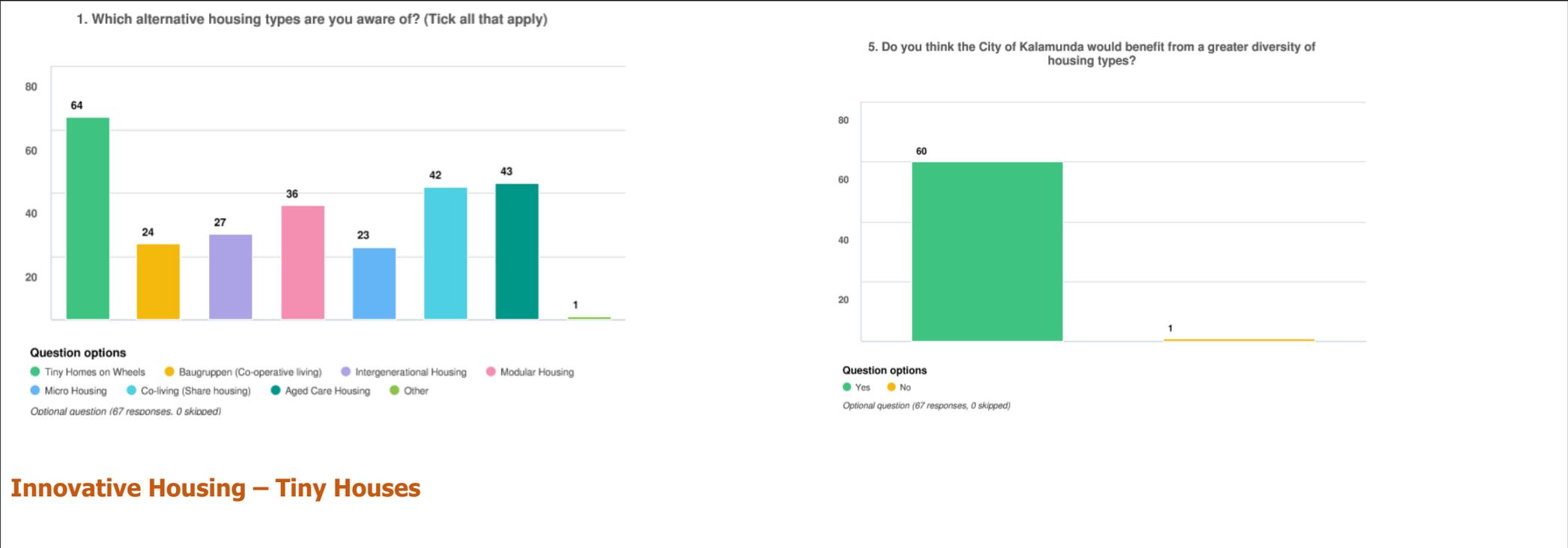
Innovative Housing – Tiny Houses

Submission	Project Visits	Daily Site Visit	New Rego	Engaged	Informed	Aware	D/Load
67	110	16	3	5	38	93	

Engagement: **Survey** to gain the thoughts, visions and values on innovative housing types. **Innovative Housing Expo** Sunday 2 December at the Kalamunda Agricultural Hall. Guest speakers were brought in to discuss housing options and ideas and real tiny homes on wheels were available for the community to look through and explore

Outcome: Over four hundred visitors descended upon the Kalamunda Agricultural Hall to catch a glimpse of the state's most innovative housing solutions. Hosted by the City of Kalamunda, the Innovative Housing Expo has been hailed a great success, thanks to its leadership in driving awareness of sustainable, economic and community driven living options.

Survey responses indicated that 63 survey respondents interested in living in an alternative housing type, preferred Tiny House, Aged Care Housing and Co-Living Housing. The same amount wanted alternative housing option available in the City of Kalamunda, with great interest shown in Tiny Houses on Wheels, Micro Housing, Modular and Baugruppen (Cooperative developments). The benefits were most highly sort after was affordability, reduced environmental impact, reduced urban sprawl and increased social interaction, with large support for an amendment to the City Planning Scheme.



Innovative Housing – Tiny Houses

City of Kalamunda
Published by Robyn Fassom [?] · November 22, 2018 · Like Page

🥳🥳 We're getting excited to host our first ever ****Innovative Housing Expo**** on Sunday 2 December at the Kalamunda Agricultural Hall from 10am - 4pm! 🥳🥳

Come and check out the amazing array of sustainable, environmentally and economically friendly housing options.

With real Tiny Homes on Wheels and an impressive line-up of key note speakers, it's a day not to be missed! ... [See More](#)



🌱 **Get More Likes, Comments and Shares**
Boost this post for \$42 to reach up to 8,800 people.

3,907 People Reached **495** Engagements [Boost Post](#)

Performance for Your Post

3,907 People Reached

111 Reactions, Comments & Shares

72 Like	66 On Post	6 On Shares
2 Love	2 On Post	0 On Shares
29 Comments	28 On Post	1 On Shares
8 Shares	8 On Post	0 On Shares

384 Post Clicks

41 Photo Views	0 Link Clicks	343 Other Clicks
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City of Kalamunda
Published by Ashlin Gardner [?] · November 19, 2018 · Like Page

Tiny Homes on Wheels, Co-operative Housing, Intergenerational Living ... Do you think our community could benefit from a more diverse range of affordable, sustainable and community orientated living options?

🗣️ Tell us what you think at engage.kalamunda.wa.gov.au/innovativehousing or come and see what it's all about at the City's ****Innovative Housing Expo**** on Sunday 2 December at the Kalamunda Agricultural Hall. It's FREE! 🥳



✅ **Get More Likes, Comments and Shares**
Boost this post for \$42 to reach up to 8,800 people.

2,946 People Reached **270** Engagements [Boost Post](#)

👍👍 Trish Milne, Wilmar Nel and 20 others 7 Comments 16 Shares

Performance for Your Post

2,946 People Reached

72 Reactions, Comments & Shares

38 Like	19 On Post	19 On Shares
3 Love	3 On Post	0 On Shares
15 Comments	7 On Post	8 On Shares
16 Shares	16 On Post	0 On Shares

198 Post Clicks

20 Photo Views	8 Link Clicks	170 Other Clicks
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NEGATIVE FEEDBACK

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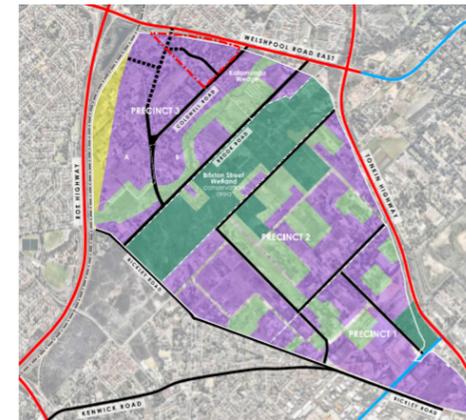
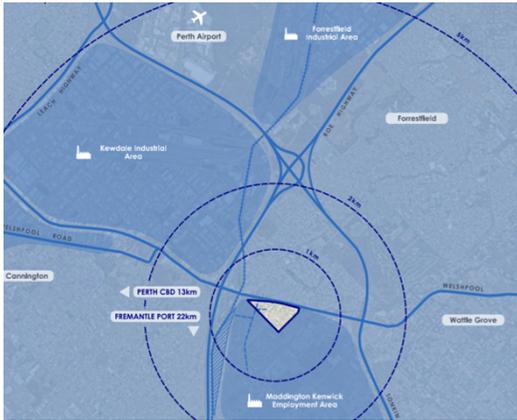
Reported stats may be delayed from what appears on posts

Comments closed on the 4 March 2019

Local Planning Policy – DEV 62 – Maddington – Kenwick

Submission	Project Visits	Max Visitors Daily	New Rego	Engaged	Informed	Aware	D/Load
5	120	11	1	1	23	81	18

The purpose of this report was to consider submissions and final adoption of Local Planning Policy P-DEV 62 – Design Guidelines: Kalamunda Wedge Industrial Area – Precinct 3A (Policy). The Policy has been written with the intent of protecting the amenity of the locality and that of the surrounding landowners as well as providing guidance for the design and consideration of development within the Kalamunda Wedge Industrial Area



The draft Local Planning Policy was advertised for public comment and made available to view via the City Website, on Kalamunda Engage or available in hard copy, along with mapping of the MKSEA. A Community Information evening took place on the 31 October 2018 at the City’s Administration Centre Function Room.

Community was invited to have their say by lodging a submission. Comments closed at 5pm on Friday, 9 November 2018. Any person who wishes to comment was required to submit comments with the application number PG-LPS-003/089 via online, email, or by post. A total of five submissions were received during the submission period, four of which were objections with the balance providing comment.

Key concerns raised during the advertising period were measures to mitigate any impacts on the Greater Brixton Street Wetlands (GBRW) and the Yule Brook should be better addressed. Provisions should be included to ensure the retention of vegetation. Sustainability should be better considered (i.e. limiting the ‘Heat Island’ effect). Provisions should be included to ensure no further changes to the natural ground level can be approved; and extent of landscaping buffers and loss of developable land.

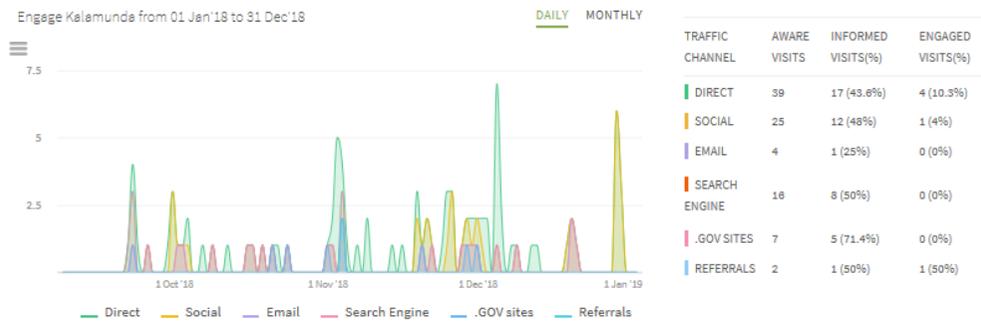
Outcome: Council adopted Local Planning Policy P-DEV 62 – Design Guidelines: Kalamunda Wedge Industrial Area – Precinct 3A at Attachment 1 pursuant to Clause 4(3)(b)(i) and Clause 4(4) of Schedule 2 of the Planning and Development (Local Planning Schemes) Regulations 2015.

Bushfire Season 2018

Submission	Project Visits	Max Daily Visits	New Rego	Engaged	Informed	Aware	D/Load
7	93	7	13	7	40	79	11

Engagement on Hazards is always challenging, as people prefer not to believe they are at risk. In 2018, this community was at the inform level of engagement so raising awareness through a lot of information was needed. In 2019, engagement can be enhanced to activity-based engagement (Winter-burn classes, Property Walk throughs: RUI, Street Meets, Volunteer Fire Brigade at City events etc...) as well as information-based engagement and working one on one with residents and high risk streets. The City needs to actively promote year-round property maintenance, for both winter storms and bushfire season. The new DFES Bushfire multi-channel campaign will assist greatly in community awareness and education in 2019 I believe a high-level engagement in 2019 will gain greater traction in community preparedness. Night presentations are not effective for this as those at greatest risk will not go out and drive at night, we need to change this approach for 2019.

Visits by Channel



Visitors Summary



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	NEW REGISTRATIONS
93	7	3
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
7	40	79

Social Media Information worked well and had strong interaction. The City would benefit from positive stories and photographs highlighting the before and after images of residents preparing properties and of the mitigation work of City Fire Officers. The City need to promote leading by example and show the community what the City is doing to prepare and protect the wider community, while highlighting the need for personal responsibility. With an older population, the City has many obstacles to still work through in improving the preparedness levels of the community. Engagement for 2019 needs to be increased to gain a build an acceptance and shared understanding of the risk. Property preparedness campaigns need to be considered and some new approaches implemented, and the City needs to promote the work that it is achieving and the success stories, so we lead by example.

Information needs to be targeted and an engagement approach created for the communities at risks groups. In particular, the aged care facilities in high Fire Risk areas evacuation plans, along with day care and education facilities. Bushfire preparedness does not stop at property preparation, survival planning is key.

Bushfire Season 2018

Examples of Bushfire Awareness campaign through engaging on Social Media

City of Kalamunda
Published by Engage Kala · February 8 at 6:00 AM · Like Page

✗ Don't wait for a knock on the door or a text message from Emergency Services! ✗

If you live in the City of Kalamunda, then you live in a bushfire risk area. You and your household need to understand the Fire Danger Ratings and the Bushfire Warning System.

Stay Informed... See More

7,963 People Reached
166 Reactions, Comments & Shares

104 Like	43 On Post	61 On Shares
1 Love	0 On Post	1 On Shares
6 Wow	0 On Post	6 On Shares
2 Sad	1 On Post	1 On Shares
10 Comments	2 On Post	8 On Shares
43 Shares	43 On Post	0 On Shares

732 Post Clicks
68 Photo Views | 62 Link Clicks | 602 Other Clicks

NEGATIVE FEEDBACK
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0 Report as Spam | 0 Unlike Page

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Get More Likes, Comments and Shares
Boost this post for \$42 to reach up to 8,800 people.

7,963 People Reached | 898 Engagements | Boost Post

City of Kalamunda
Published by Engage Kala · December 1, 2018 · Like Page

🚫 BURNING PROHIBITED 🚫
1 December 2018 to 31 March 2019

Burning is now prohibited. NO Burning is allowed. Report ALL signs of smoke to 000... See More

6,670 People Reached
72 Reactions, Comments & Shares

33 Like	15 On Post	18 On Shares
2 Wow	0 On Post	2 On Shares
1 Sad	0 On Post	1 On Shares
7 Comments	4 On Post	3 On Shares
29 Shares	28 On Post	1 On Shares

302 Post Clicks
38 Photo Views | 4 Link Clicks | 260 Other Clicks

NEGATIVE FEEDBACK
2 Hide Post | 0 Hide All Posts
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Reported stats may be delayed from what appears on posts

Get More Likes, Comments and Shares
Boost this post for \$42 to reach up to 8,800 people.

6,670 People Reached | 374 Engagements | Boost Post

City of Kalamunda is in Kalamunda, Western Australia, Australia.
Published by Robyn Fassom · November 16, 2018 · Like Page

🙏 Thank You 🙏

The City of Kalamunda would like to say thank you to all of the hardworking members of the Kalamunda Volunteer Bush Fire Brigade, Kalamunda Volunteer Fire & Rescue Service, @Kalamunda State Emergency Service, and Chris and Eddie from @Kalamunda Bushfire Ready! ... See More

5,399 People Reached
322 Reactions, Comments & Shares

268 Like	130 On Post	138 On Shares
12 Love	6 On Post	6 On Shares
2 Wow	1 On Post	1 On Shares
16 Comments	10 On Post	6 On Shares
25 Shares	24 On Post	1 On Shares

1,101 Post Clicks
378 Photo Views | 3 Link Clicks | 720 Other Clicks

NEGATIVE FEEDBACK
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0 Report as Spam | 0 Unlike Page

Reported stats may be delayed from what appears on posts

Get More Likes, Comments and Shares
Boost this post for \$42 to reach up to 8,800 people.

5,399 People Reached | 1,423 Engagements | Boost Post

Ross Juras-Minett, Elizabeth Lewis and 130 others · 10 Comments 24 Shares

Local Planning Policy P-DEV 57: Street Fencing, Walls and Gates Policy.

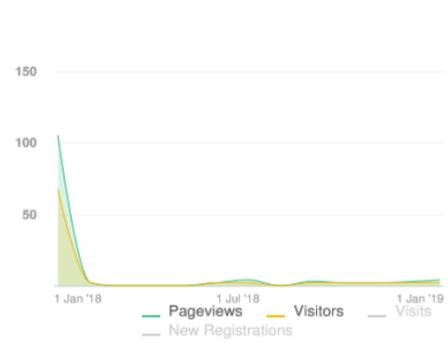
Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
0	84	29	0	0	20	78	4

The City of Kalamunda called for public comment on Local Planning Policy P-DEV 57 – Street Fencing, Walls and Gates Policy.

The purpose of this policy, was to provide guidance to the community regarding height, materials, and location and aesthetic treatments for street fencing, walls and gates. Proposed Draft Local Planning Policy P-DEV 57- Street Fencing, Walls and Gates Policy was released for review by community. The Policy was promoted, during the advertising period a total of two submissions were received, comprising of non-objections to the provisions of the Policy. One of the non-objections did request clarification as to how the new Policy would impact upon residents who have existing fencing that do not meet the criteria of the Policy.

Outcome: Council at its Ordinary Council Meeting held on the 26th of June 2018 considered the proposal and resolved to adopt the amendment. This will be due once again for review on the 26 June 2020

Visitors Summary



Highlights

TOTAL VISITS	84	MAX VISITORS PER DAY	29
NEW REGISTRATIONS	0	ENGAGED VISITORS	0
INFORMED VISITORS	20	AWARE VISITORS	78

Dev 65: Heritage Area – Welshpool Road

Submission	Project Visits	Max Day Visits	New Rego	Engaged	Informed	Aware	D/Load
	831	130	1	1	45	753	NA

Background: The community petitioned the City to save an avenue of mature lemon-scented gum trees in Wattle Grove (over 7000 signatures) following the scheduled tree removal to create a slip road to access the St Peters Jacobite Syrian Church development, approved by the City of Kalamunda in 2017. The Trees were planted circa 1959 by Main Roads Western Australia, to provide an entry statement into the hills region and provide a refuge for local wildlife. The City worked closely with the developer to find a workable solution.

On 27 February 2018 (OCM 12/2018), Council considered four options to establish heritage status of the Trees, including: Adding the Trees to the adopted Municipal Heritage Inventory. Creating a Heritage List and add the Trees or creating a Heritage Area and prepare a Local Planning Policy for the Trees.

Outcome: Resolved OCM 182/2018 That Council: 1. Adopts the draft entry into the Municipal Heritage Inventory for the Avenue of Lemon Scented Gum Trees on Welshpool Road East for the purposes of public advertising for a period of 28 days. Adopts the designation of a Heritage Area for the Avenue of Lemon Scented Gum Trees on Welshpool Road East for the purposes of public advertising for a period of 28 days, pursuant to Schedule 2, Part 3 of the Planning and Development (Local Planning Schemes) Regulation 2015 . 3. Adopts the Local Planning Policy for the Heritage Area for the Avenue of Lemon Scented Gum Trees on Welshpool Road East for the purposes of public advertising for a period of 28 days, pursuant to Schedule 2, Part 2 of the Planning and Development (Local Planning Schemes) Regulation 2015. The City will initiate advertising and the matter will be subsequently returned to Council to review submissions received and pass a resolution to: a) adopt the designation without modification; or b) adopt the designation with modification; or c) not proceed with the designation.



Recycling and Waste Management

Submission	Project Visits	Max Daily Visits	New Rego	Engaged	Informed	Aware	D/Load
NA	63	11	3	7	21	54	

Efficient waste collection and recycling assists to protect the environment and the health of our community. In light of recent worldwide changes, it was critical that our local community works to reduce waste, reduce pollution, recycle efficiently, protect our precious resources and our native environment. Increasing the City's efficiency by reducing contamination of recyclable goods, will save resources, lower processing costs and protect our community's environment. To help the City improve its waste and recycling services, the City introduced the new Entry Pass to Walliston Transfer Station.

Largely the community is satisfied with the current services and options provided by the City. There was some community backlash with the introduction of the Resident Pass and there are ongoing issues with reissuing lost Resident Entry Passes, these issues are currently being addressed by a working team.



City of Kalamunda
Published by Robyn Fassom [?] · January 6 ·

Bin Services Have Returned to Normal
Now that the silly season is over, waste collection will return to normal.
To remind you of your collection week, you can download the Waste Services Brochure here: <http://www.kalamunda.wa.gov.au/.../Waste-and-Recycling-2017-2.....> See More

Waste & Recycling Quick Guide



JANUARY 2019

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

- Area One recycling week
- Area Two recycling week (See BIN SERVICES page for your area location)
- Additional recycling service (see note on BIN SERVICES page)
- No Bin Collection (See BIN SERVICES page)

Get More Likes, Comments and Shares
Boost this post for \$42 to reach up to 8,800 people.

4,112	727	Boost Post
People Reached	Engagements	

Performance for Your Post

4,112 People Reached

54 Likes, Comments & Shares

21 Likes	16 On Post	5 On Shares
31 Comments	11 On Post	20 On Shares
2 Shares	2 On Post	0 On Shares

673 Post Clicks

94 Photo Views	170 Link Clicks	409 Other Clicks
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NEGATIVE FEEDBACK

0 Hide Post	0 Hide All Posts
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Reported stats may be delayed from what appears on posts



City of Kalamunda
Published by Engage Kala [?] · December 31, 2018 ·

One plastic bag can take up to 1000 years to decompose in landfill. Gather and drop lightweight shopping bags & soft plastics into Redcycle recycle bins.
The Redcycle collection bins located at Coles & Woolworths in Kalamunda, Forrestfield and High Wycombe.... [See More](#)

how to REDcycle

1. collect

2. drop

3. recycle





Get More Likes, Comments and Shares
Boost this post for \$42 to reach up to 8,800 people.

3,893	203	Boost Post
People Reached	Engagements	

Performance for Your Post

3,893 People Reached

57 Reactions, Comments & Shares

32 Like	19 On Post	13 On Shares
2 Love	2 On Post	0 On Shares
8 Comments	2 On Post	6 On Shares
15 Shares	15 On Post	0 On Shares

146 Post Clicks

32 Photo Views	10 Link Clicks	104 Other Clicks
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NEGATIVE FEEDBACK

2 Hide Post	1 Hide All Posts
0 Report as Spam	0 Unlike Page

Reported stats may be delayed from what appears on posts

Preparing for Storms: May – August 2018

Submission	Total Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
8	76	14	1	4	22	53	0

The City of Kalamunda sought to assist community to prepare their home and family for severe storms. The engagement aimed to educate and protect community through the Preparing for Storms Community Engagement Strategy. To raise awareness of risk and empower community members to confidently prepare, safely respond and recover from the impact of storms. As part of this process, the City consulted with community, and volunteer emergency personnel to understand their requirements and information needed to successfully prepare for the storm season.

- Preparedness and Emergency Information made available at all Recreational and Information hubs.
- Promoted on City Website and Engage Kalamunda
- Pop-Ups at Kalamunda Centro, Forrestfield and High Wycombe Shopping Centres, and public events as part of a wider engagement strategy.
- Community Information night: This was complimented by the support at these events from Volunteer Emergency Management personnel and emergency services including, **SES, Red Cross, DFES, Western Power and the Police**. Poor attendance on a wet, stormy night. Approx. 15.

This was the first time a community engagement strategy had been implemented for Storm preparation and emergency response. Engagement with community on natural hazards is always challenging to raise awareness, educate and change behaviour. Community tends to hope that an event that may cause injury or harm will not affect them directly, therefore initial engagement can be low, until awareness is raised, and the personal risk accepted. This was the first year of this approach and will take time to gain understanding and acceptance of risk.



Draft Local Planning Policy – P-DEV 64; Requirements for Local Planning

In response to an increasing trend and demand for Local Planning Scheme Amendments the City seeks to establish policy guidance with respect to the level of detail and information provided as part of a Local Planning Scheme Amendment Application and the timing in which the City and Council reviews, and then decides regarding the suitability of amending the Scheme.

Information was made available on the City Website and Engage Kalamunda Portal. Copy of the Policies are Available for viewing at the City of Kalamunda Administration Centre.

Outcome: Council at its Ordinary Meeting held on 18 December 2018 resolved to adopt the Local Planning Policy: P-DEV 64: Requirements for Local Planning Scheme Amendments, pursuant to Clause 4(3)(b)(i) and Clause 4 (4) of the Planning and Development (Local Planning Scheme) Regulations 2015.

Website Redevelopment

Submission	Project Visits	Max day visits	New Rego	Engaged	Informed	Aware	D/Load
3	25	7	0	4	11	19	2

The City sought community members to register their interest to join a working group to participate in our website development, of all ages and interests. The working group will assist the City to understand how we can create a website that is focused on you – the user.

Commencing with a discovery workshop, giving feedback on the site following the design layouts and reviewing the website as it is created. A Discovery Workshop was held on the 21 August, 2018. Promotion took place on the City Website and on Kalamunda Engage to help gather current feedback on current system and how stakeholders would like to see/use the upcoming site. All feedback was then reviewed for Website Redevelopment to fully understand current needs vs expectation. Designing of site then commenced taking into consideration feedback from stakeholders, designs were previewed.

Currently the Website Content is being checked and migrated.

Responsive

The website should be able to work on any smart device. Layout and Functionality should not be affected by the type of device being used.

Accessible

The site should be compatible with and cater for all to access/read information and use services on the site.

Good Search capabilities

Ensure the site is able to use a search function which returns relevant and current information based on search terms.

Proposed Upgrades to Tanner Road, Carmel

Submission	Project Visits	Max Daily Visit	New Rego	Engaged	Informed	Aware	D/Load
7	16	2	1	2	9	10	

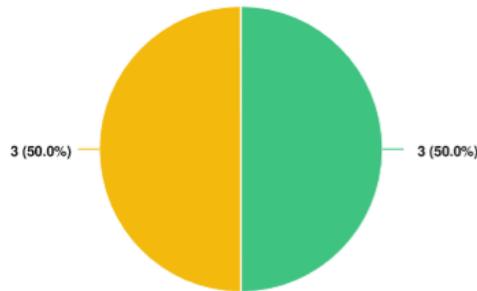
To improve safety and amenity for road users and local residents, the City of Kalamunda is proposing to upgrade the dead end on Tanner Road, Carmel to a cul-de-sac.

The City developed three potential designs for the cul-de-sac for community consideration, each with varying requirements regarding vegetation clearing, service relocation and more. Engagement then gained feedback on the proposed designs. Comments closed 5pm Thursday 9 August 2018.

The City then collated and reviewed feedback. An outcomes summary was produced and put to Council at the Ordinary Council Meeting for their consideration.

Outcome: Discussions are taking place with landowners.

Q3 2. Of the three cul-de-sac designs below, which do you prefer?



Question options

- Design C
- None of the above

Visitors Summary

Engage Kalamunda from 01 Jan'18 to 31 Dec'18

DAILY MONTHLY



Highlights

TOTAL VISITS	MAX VISITORS PER DAY	NEW REGISTRATIONS
16	2	1
ENGAGED VISITORS	INFORMED VISITORS	AWARE VISITORS
2	9	10

Local Planning Scheme No.3 - Scheme Amendment No. 35 (PG-LPS-003/035)

Submissions were required to be submitted noting **G-LPS-003/035**, the property affected and details of the submission via the following methods:

Background: That Council on 21 November 2011 passes the following resolution:

Initiates modified Amendment No. 35 to Local Planning Scheme No. 3 in accordance with the following:

1. Changing the density of Lot 31 (16) and Lot 32 (20) Halleendale Road and Lot 33 (10) Dan Close, Walliston, from Residential Bushland R2.5 to Residential Bushland R5 and amend the Scheme Map accordingly.
2. Rezoning the north-west portion of Lot 9000 (20) Dan Close, Walliston, from Special Rural to Residential Bushland R5.

Outcome: Last correspondence from the WAPC 4 December 2018 stating that: 'The Minister has required the amendment to be modified in the manner specified in the attached schedule of modifications in accordance with section 87(2)(b) of the Act, before it is resubmitted under section 87(1)'

Local Planning Scheme No.3 - Scheme Amendment 95

The City of Kalamunda sought comment on proposed **Local Planning Scheme No.3 - Scheme Amendment 95**, which proposed to rezone for an additional land use for (Reception Centre) at Lot 601 (782) Welshpool Road, Wattle Grove. The purpose of the proposed additional use is to facilitate the land use of Reception Centre for weddings.

Outcome: Approved

It is hereby notified for public information, in accordance with section 87 of the Planning and Development Act 2005 that the Minister for Planning Lands and Heritage approved the City of Kalamunda Local Planning Scheme Amendment No. 95 on 19 December 2018.

Submissions were requested via the following channels:

Online: [submit online here](#)

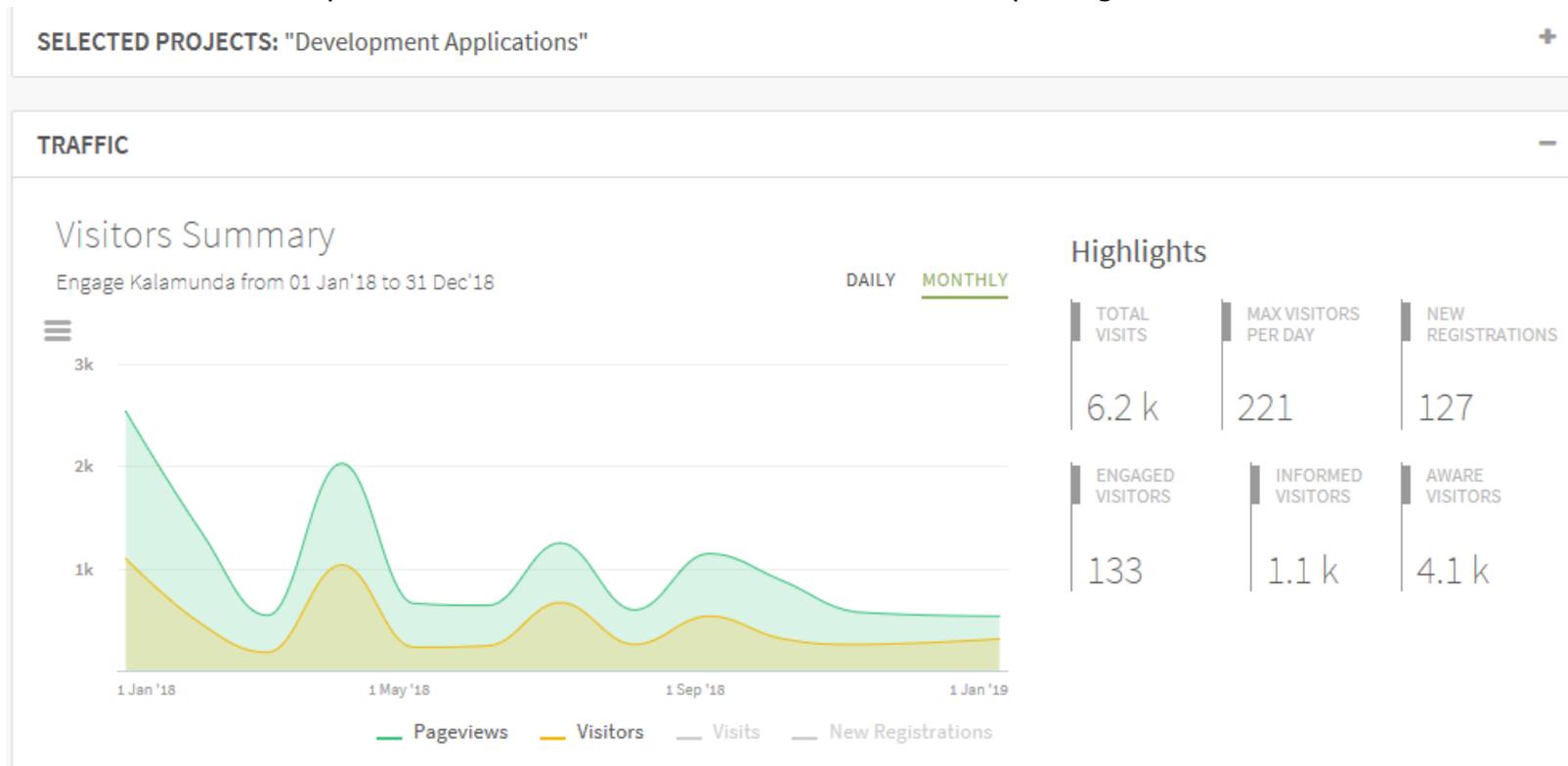
By Email: enquiries@kalamunda.wa.gov.au(External link)

By Post: City of Kalamunda, PO Box 42, Kalamunda 6926

Comments closed 5pm on 12 February 2018

Development Applications in 2018 on Engage HQ

Good planning ensures that building or land use is compatible with the surrounding area, that provision for shops, factories and other commercial enterprises is made and that the traffic circulation and parking areas are sufficient.



Highest 3 levels of community interest in Development Applications were:

Clearing of vegetation and establishment of educational facility:	Lesmurdie Road, Lesmurdie	922 Newsfeed Visitors
Place of Worship, Community Hall and Culvert Crossing:	Lewis Road, Wattle Grove	498 Newsfeed Visitors
Proposed Local Development Plan:	Gavour Road, Wattle Grove	436 Newsfeed Visitors

Development Applications 1 January 2018 to 31 December 2018

Proposal for Clearing of Vegetation and Educational Establishment: Lot 202 (200) Lesmurdie Road, Lesmurdie

Submission	Project Visitors	Newsfeed	New Regis	Engaged	Informed	Aware - Visits	Download
28	100	922	0	28	100	1080	

City of Kalamunda received an application for the clearing of 2500m² of vegetation and the extension of an existing heritage registered building for the purposes of developing an Educational Establishment (Early Learning Centre) at Lot 202 (200) Lesmurdie Road, Lesmurdie. The subject site has a split zoning of Private Clubs and Institutions and Residential.

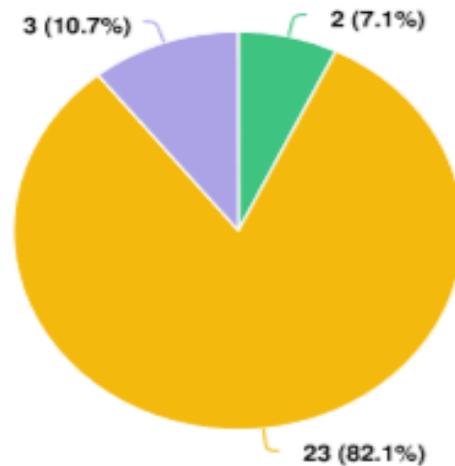
- The Notice was advertised, and public submissions were called for.
- Plans and documents will be open for inspection during the comment period at the City's Administration Office
- Submissions could be made Online, by Email or in person.
- The City held a drop-in community information evening on 24 January 2018 at the City's Administration Centre Function Room.
- Consultation was extended to allow comments to be provided following this event.

82.1% Objected to proposal / 7.1% No Objection / 10.7% Comment Only

Development Proposal: Clearing of Vegetation and Early Learning Centre: Lot 202 (200) Lesmurdie Road, Lesmurdie

VISITORS	100	CONTRIBUTORS	27	CONTRIBUTIONS	28
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Please select one of the following:



Question options

- Do Not Object
- Object
- Comment Only

(28 responses, 0 skipped)

Outcome: Withdrawn Application: DA17/0560 - Earthworks, Clearing and Mulching *withdrawn by the applicant on the 19 April 2018*
DA17/0561 – Early Learning Center *withdrawn by the applicant on the 19 April 2018*

Development Applications 1 January 2018 to 31 December 2018

Have Your Say: **Development Application** - 28 Lewis Road, Wattle Grove DA17/0367

Submission	Project Visitors	News feed	New Rego	Engaged	Informed	Aware Visits	D/Load
1	14	498		1		558	1

Place of Worship, Community Hall and Culvert Crossing, Wattle Grove.

The key elements of the proposal included:

- Retention of the existing dwelling & Community Main Hall (New building)
- Car park for 50 vehicles with temporary overflow parking
- Construction of a Culvert Crossing, Kitchen, clinic and crèche
- Removal of trees.
- Bushfire Evacuation Response Plan & Traffic Impact Assessment
- Information pertaining to the specific land use which will be undertaken on site.

The DA Notice was advertised, and public submissions were called for. Submission could be made Online, by Email or in person. Plans were made available for viewing at the City. The City of Kalamunda held a community drop in session, inviting community to attend to have the opportunity to ask questions of staff and discuss the proposal. This was held on Wednesday, 21st March 2018, at the City Function Room. Consultation closed 5pm on 5th April 2018.

Outcome: Withdrawal of Application DA17/0367

Progress Report: The City of Kalamunda has received a Development Application for a proposed Place of Worship and Community Purpose at Lot 213 (28) Lewis Road, Wattle Grove. The application is being considered and determined by the **Metro East Joint Development Assessment Panel (JDAP)**.

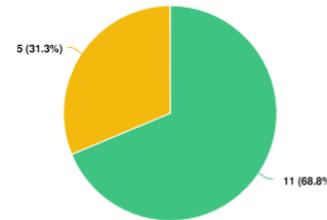
Community Information Evening: The City will be holding a community engagement information evening, on 27th of February 2019 between 5:30pm and 6:30pm. The purpose of the session is for the City's planning staff to assist the public in interpreting the plans for the proposal that will be on display and answer any questions. These sessions will be informal and give the community the opportunity to interact with planning staff on a one-on-one basis. Current consultation comments close 5pm 11th of March 2019.

Development Applications		1 January 2018 to 31 December 2018					
Lot 33 Hale Road, Wattle Grove DA/0138 - Change of use.							
Submission	Project Visitors	News Feed	New Rego	Engaged	Informed	Aware Visits	D/Load
16	275	104		16		275	
<p>Proposed change of use to small bar. The proposal is described as a sports bar atmosphere with American style tapas, pub style foods and family friendly environment. The expected maximum capacity is 120 people including staff, with live music proposed on weekends. The DA Notice was advertised, and public submissions were called for. Submission could be made Online, by Email or in person.</p> <p>Closed for comment. 68.8% No Objection to 31.3% Objected to Plan</p> <p>Council Report: The applicant would be required to comply with undertake a detailed noise assessment in relation to the Environmental Protection (Noise) Regulations 1997 to the satisfaction of the City of Kalamunda prior to commencing the development. Anti-social behaviour is a consideration and will relate largely to management of the premises.</p> <p>Outcome: Approved by Council: Applicant yet to facilitate Approval</p>							

Proposed Change of Use from Shop to 'Use Not Listed (Small Bar)' - Lot 33 (332) Hale Road, Wattle Grove (DA18/0138)

VISITORS	275	CONTRIBUTORS	16	CONTRIBUTIONS	16
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Please select one of the following:



Question options
 ● Do Not Object ● Object
 (16 responses, 0 skipped)

Development Applications 1 January 2018 to 31 December 2018

Notice of Development Proposal – Lot 101 (14) Brentwood Road, Wattle Grove

Submission	Total Visits	News Feed	New Rego	Engaged	Informed	Aware	D/Load
0	10	11		0		11	0

The City of Kalamunda received an application for the proposed use of 14 Brentwood Road, Wattle Grove for stockfeed sales.

The application incorporated the following key elements:

- Retention and continued use of the existing dwelling.
- Construction of Two (2) 12m x 40m steel sheds, 5m wall height and 5.8m ridge height.
- The sheds are proposed to be used to store and sell hay, grain, chaff and stock feed.
- Hours of operation are proposed to be 8am – 5pm, Monday to Friday, and 8am – 1pm on Saturdays.
- A maximum of two (2) staff members would be on site at any given time, and it is expected that the site would receive approximately 20 customers per day.
- It is estimated two (2) deliveries will be undertaken from the site per day, via an 8.8m small rigid truck and a four-wheel drive.

- The Notice of Development was advertised
- Public Submissions were called for (Website/Engage)
- Submission could be made Online, by Email or in person.
- Engage HQ – No online responses were registered, no report downloaded

Outcome Update: This application has been deactivated and is currently not open for comment due to changes in the proposal. Plans and documents setting out an explaining the development application are now deactivated and are no longer available online as the comment period has now concluded. Once these changes have been received and reviewed this proposal will be available for comment.

Use Not Listed (Stockfeed Sales)

Development Applications 1 January 2018 to 31 December 2018

Proposed Micro-Brewery, Restaurant, Reception Centre, Six Chalets, Day Spa and Ancillary Dwelling:

Lot 602 (113) Kawina Road, Bickley (DA18/0298)

Submission	Total Visitors	News Feed	New Rego	Engaged	Informed	Aware Visits	D/Load
31	126	352		32		126	

The City of Kalamunda received a Development Application for a proposed Micro-Brewery, Restaurant, Reception Centre, Six Chalets, Day Spa and Ancillary Dwelling at Lot 602 (113) Kawina Road, Bickley. The DA Notice was advertised, and public submissions were called for.

Submission could be made Online, by Email or in person. Plans and documents setting out an explaining the development application were made available, including Acoustic Assessment, Bushfire Evacuation Plan, Bushfire Management Plan, Environmental Surveys, Transport Impact, Wastewater Management Plan.

A Community Drop-in Session was held to assist residents in interpreting the plan and to answer any questions on the 12 September at the City Administration Function room. Submissions closed 5pm 26 September 2018.



Outcome: This application has been put on hold at the request of the applicant.

Development Applications 1 January 2018 to 31 December 2018

Proposed Increase in Number of Children and Modified Operating Hours at Existing Child Care Premises (DA17/0531 & DA17/0532)

Submission	Total Visits	News Feed	New Rego	Engaged	Informed	Aware	D/Load
4	14	98		4	14	98	0

The City of Kalamunda received two (2) development applications seeking planning approval for an increase in the number of children and modified operating hours at existing child care premises. Planning approval is required for the child care premises to continue to operate with the increased number of children and modified operating hours.

- ❖ Application No: DA17/0531 - Lot 19 (36) Marri Crescent & Application No: DA17/0532 - Lot 55 (61) Coolinga Road

Onsite engagement: In collaboration with the operator, Pachamama, the City held a drop-in community information evening on 23 January 2018 at the subject site, located at 61 Coolinga Road, Lesmurdie.

Online Engagement: Engage HQ – 4 online responses: January 2018

All four responses are against the proposed increase in number of children and modified operating hours at Existing Child Care

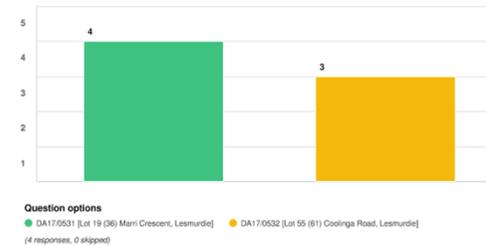
Outcome: Approved. (DA17/0531 DA17/0532) Approved the conditions of planning approval for the increase in the number of children and modified operating hours for the existing Pachamama Child Care Centre located at Lot 19 (36) Marri Crescent, Lesmurdie as submitted by Allerding and Associates and received by

the City of Kalamunda on dated 21 July 2017. Progress: Sec31 request for reconsideration on the revised conditions of planning approval approved by Council SCM 22 January 2019.

Development Proposal: Proposed Increase in Number of Children and Modified Operating Hours at Existing Child Care Premises

VISITORS 14 CONTRIBUTORS 4 CONTRIBUTIONS 4

Application No:



Development Applications 1 January 2018 to 31 December 2018

Proposal for Alterations and Additions to existing buildings (Aged Care) (DA17/0455) Lot 7, 24 Valencia Road, Carmel

Submission	Total Visits	Visitor	Comment	Engaged	Informed	Aware	D/Load
17	328	31	0	17	31	328	

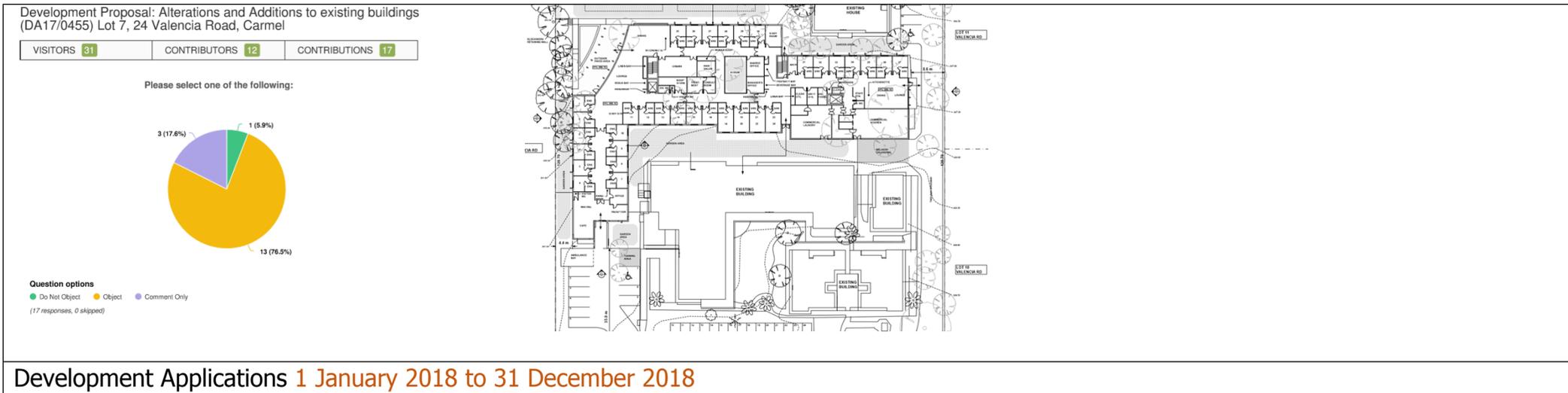
Engage HQ – 17 online responses: 76.5% Objected to proposal
5.9% No Objection
17.6% Comment Only

The City of Kalamunda received an application for Alterations and Additions to existing Facility including new three storey building (Aged Care). A **Drop-in Community Information Session** was held on Thursday 8 February 2018 at 6.00pm at the Function Room. The purpose of the session was for the City’s planning staff to assist the public in interpreting the plans for the proposal that was displayed and answer any questions. These sessions were informal and give the community the opportunity to interact with planning staff on a one-on-one basis. Elected members and the applicant were also invited to attend. Submissions on the development application could be lodged in writing, on or before 27th April 2018.

Plans and documents setting out an explaining the development application were made available online, with hard copies made available for inspection during office hours at the City’s Administration Office.

Outcome: This item has been **refused**

For full details, please read JDAP minutes titled: *15 June 2018 - Minutes - No 164 - City of Kalamunda (page 11)*



Development Applications 1 January 2018 to 31 December 2018

Proposed Local Development Plan (LDP) - Lot 500 (32) Gavour Road, Wattle Grove WA 6107 (DA18/0226)

The application seeks to provide development guidance for the future establishment of an aged care facility, retirement village, and associated structures. The following documents were provided as part of the application:

- Locality Plan
- Bushfire Management Plan
- Landscaping Concept Plan
- Transport Impact Statement
- Local Development Plan

Community Information Evening : The City held a drop-in community information evening on the 5 July 2018 at the City's Administration Centre. This session allowed the City's planning staff to assist the public in interpreting the plans for the proposal that was on display and to answer any questions. These sessions were informal and gave the community the opportunity to interact with planning staff on a one-on-one basis. Plans and documents setting out and explaining the development application could also be viewed at the City of Kalamunda Administration, 2 Railway Road, Kalamunda during office hours. Submission were also invited from the public and could be lodged in person, by email or on online. Comments closed 5pm 15th July 2018.



Outcome: Submissions from the community have been reviewed and taken into account. The Local Development Plan will be considered at the March Ordinary Council Meeting.

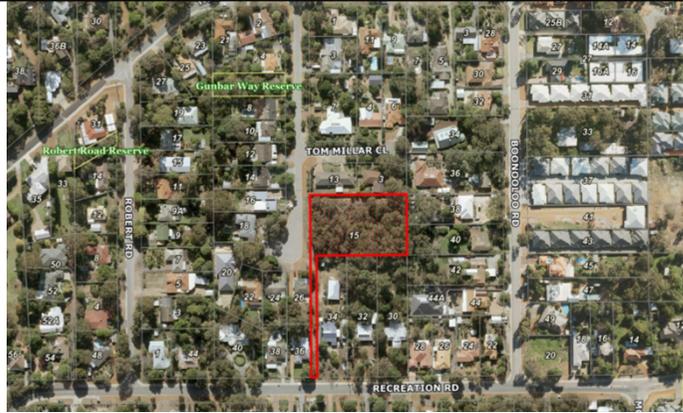
Development Applications 1 January 2018 to 31 December 2018

Notice of Development Proposal for Lot 4 (15) Gunbar Way, Kalamunda (DA18/0166)

Submission	Total Visits	Visitor	Comment	Engaged	Informed	Aware	D/Load

The City of Kalamunda received a Development Application for a proposed 10 Grouped Dwelling development at Lot 4 (15) Gunbar Way, Kalamunda. The documents that were provided as part of the application and engagement included a location plan, site survey, aborigicultural assessment, flora, vegetation and fauna assessment, proposed plans and waste management plan. Alternatively, the documentation could be viewed at the City of Kalamunda Administration Centre located at 2 Railway Road, Kalamunda during office during business hours.

A Community Information Evening was held on the 25 October 2018 at City’s Administration Centre Function Room. The purpose of the session was for the City’s planning staff to assist the public in interpreting the plans for the proposal that was on display and answer any questions. Any person who wished to comment could lodge submission comments online, via email, by post or in person. Comments closed 7 November 2018.



Outcome: Community feedback was provided to the applicant who are currently reviewing their plans following the feedback provided.

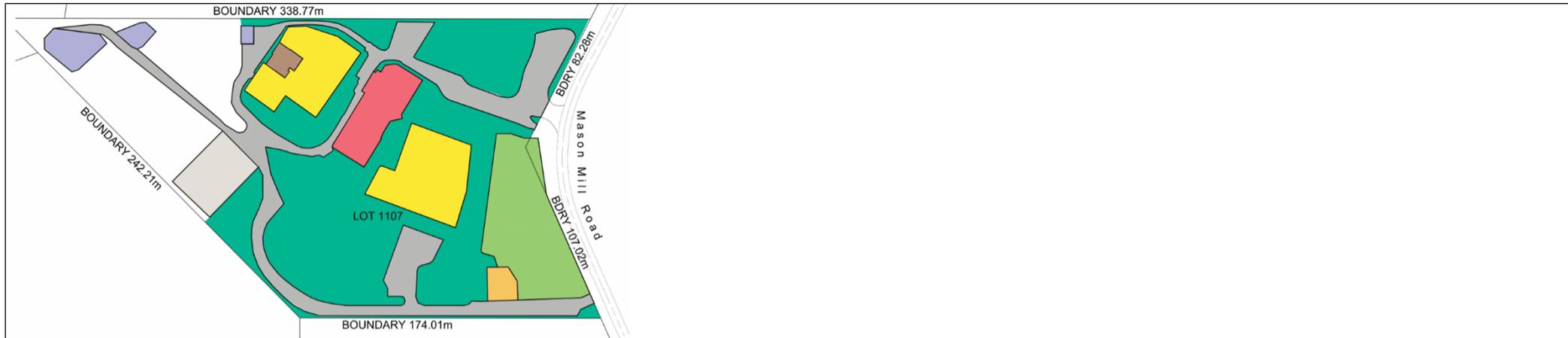
Development Applications 1 January 2018 to 31 December 2018

Development Application for Change of Use, Approval For Existing Uses & A Local Development Plan: Lot 1107 (40) Masonmill Road, Carmel (DA17/0588)

Submission	Total Visits	Visitor	Comment	Engaged	Informed	Aware	D/Load

The City of Kalamunda received a Development Application and a Local Development Plan for Lot 1107 (40) Masonmill Road, Carmel.

The application follows approval of Local Planning Scheme 3 Amendment 85 which was gazetted on the 25th of August 2017 approving additional land uses for Reception Centre, Tavern, Shop, Caretakers Dwelling, Garden Centre, Recreation Private and Tourism Development.



Outcome: The DA was conditionally approved on the 7th December 2018.

Development Applications 1 January 2018 to 31 December 2018

Proposed Modification to Structure Plan: Lot 9003 (46) Gala Way, Forrestfield. (PG-STU-028)

Submission	Total Visits	Visitor	Comment	Engaged	Informed	Aware	D/Load

Proposed Modification to Structure Plan (Replacement of Vehicular Bridge at Crumpet Creek with Pedestrian Bridge, Revised Location of Public Open Space, and Addition of New R60 Coded Area) – Lot 9003 (46) Gala Way, Forrestfield. (PG-STU-028)

The City of Kalamunda received an application for a proposed modification to the existing structure plan at the above mentioned property. The application sought to replace a vehicular bridge across Crumpet Creek with one that is only used for pedestrian and cycle traffic, revise the location of Public Open Space, and introduce a new portion of R60 coded lots.

Plans and documents were available for inspection during the comment period at the City’s Administration Offices located at 2 Railway Road, Kalamunda, during office hours. Comments closed 5pm 27th April 2018. Any person who wished to comment could lodge submission comments online, via email, by post or in person. Comments closed 5pm 7 November 2018.

Outcome: This application was Withdrawn 28 May 2018.

Development Applications 1 January 2018 to 31 December 2018

Notice of Proposed Amendment to Outline Development Plan: Karingal Green (IN18/710COD16)

Submission	Total Visits	Visitor	Comment	Engaged	Informed	Aware	D/Load

The City of Kalamunda received an application for an amendment to the Karingal Green Outline Development Plan. The proposed amendment involves the density increase from R30 to R60 for Lot 265 Callophylla Way, Lot 316 Catspaw Way and Lot 321 Buttercup Crescent, High Wycombe.

Plans could be viewed online or alternatively, the proposed plan could be viewed at the City of Kalamunda Administration Centre located at 2 Railway Road, Kalamunda during office during business hours. Any person who wished to comment was required to include the property affected and reference number (IN18/710COD16) with the submission online, via email, by post or in person. Comments closed 5pm 14 December 2018.



Outcome: Pending further information from the applicant.